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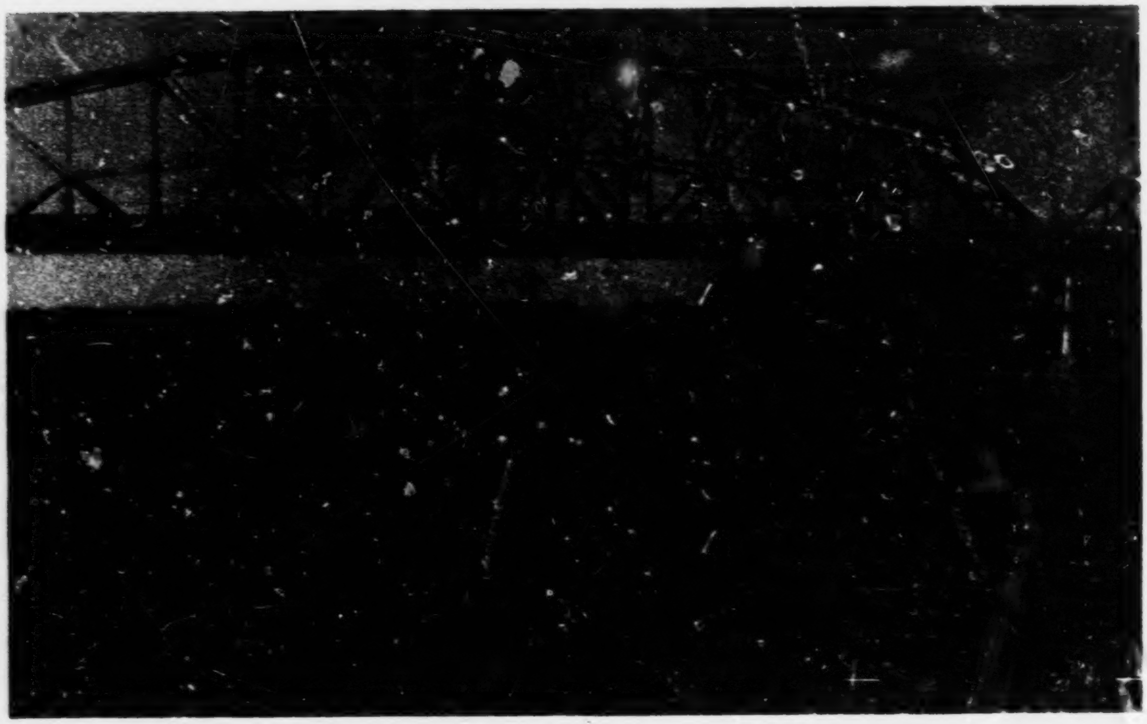
STREAMFLOW CHARACTERISTICS OF THE HUDSON BAY AND UPPER MISSOURI RIVER BASINS, MONTANA, THROUGH 1979

COMPLETE
149

U.S. GEOLOGICAL SURVEY

Water-Resources Investigations 81-32



Prepared in cooperation with the
MONTANA DEPARTMENT OF NATURAL
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MARCH 3, 1849

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Statistical summaries of streamflow data for selected stream-gaging sites are presented in this report to aid in appraising the hydrology of the Hudson Bay and upper Missouri River basins. Streamflow records are presented for 122 gaging stations for the period of record. Streamflow record collection in the Hudson Bay and upper Missouri River basins began in 1890.

For each gaging station selected for this report, a brief description is given for station location, drainage area, period of record, revisions of previously published records, type and history of gages, regulation and diversions, and extremes of discharge. These data are followed by tables of monthly and annual flow statistics, high-flow and low-flow frequency data, flood-frequency data, and flow-duration information.

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UNITED STATES DEPARTMENT OF THE INTERIOR

JAMES G. WATT, Secretary

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Figure 1. Map showing location of streamflow-gaging stations. 4

METRIC CONVERSION TABLE

To convert inch-pound units in this report to metric units, multiply by the following factors:

Multiply inch-pound unit	By	To obtain metric unit
acre-foot per year (acre-ft/yr)	0.001233	cubic hectometers per year (hm^3/yr)
cubic foot per second (ft^3/s and CFS)	0.02832	cubic meter per second (m^3/s)
foot (ft)	0.3048	meter (m)
inch (in.)	25.40	millimeter (mm)
mile (mi)	1.609	kilometer (km)
square mile (mi^2)	2.590	square kilometer (km^2)

STREAMFLOW CHARACTERISTICS OF THE HUDSON BAY AND UPPER MISSOURI RIVER BASINS, MONTANA, THROUGH 1979

By

Ronald R. Shields and Melvin K. White

ABSTRACT

Statistical summaries of streamflow data for selected gaging stations are presented in this report to aid in appraising the hydrology of the Hudson Bay and upper Missouri River basins in Montana. Streamflow records are presented for 122 gaging stations for the period of record of each station. Streamflow-record collection in the Missouri River basin began in 1890 at Fort Benton, Montana.

For each streamflow-gaging station selected for this report, a brief description is given for station location, drainage area, period of record, revisions of previously published records, type and history of gages, regulation and diversions, average discharge, and extremes of discharge. These data are followed by tables of monthly and annual mean discharge, flood-frequency data, low-flow and high-flow frequency data, and flow-duration information.

INTRODUCTION

Purpose and scope

As a prerequisite to comprehensive planning for the development and management of the State's surface-water resources, the Montana Department of Natural Resources and Conservation is actively appraising the hydrology of the Hudson Bay and upper Missouri River basins. The purpose of this report is to present statistical summaries of streamflow data for selected streamflow-gaging sites in the river basins to aid in that appraisal. Monthly and annual mean discharge, flood-frequency data, low-flow and high-flow frequency data, and flow-duration data were determined for 122 gaging stations. The data should be useful to individuals and agencies concerned with water development in the basins. This report was prepared in cooperation with the Montana Department of Natural Resources and Conservation.

Acknowledgments

Special thanks are extended to Gary Rogers, who wrote the computer program to merge all statistical data into one table, and to Donna K. Vincent, who spent many hours compiling and checking data for the various streamflow-statistics tables.

STREAMFLOW RECORDS

Streamflow statistics are presented in this report for the gaging stations shown in figure 1. Each station is assigned an index number in downstream order. The numbering system is the same as that used in all U.S. Geological Survey streamflow-data reports.

Period of record

Records through September 30, 1979 (or September 30 of last year of record, if discontinued prior to 1979), were used in computing monthly and annual mean discharge, high-flow frequency, and flow-duration data. Low-flow frequency data were computed on the basis of the climatic year, which ends March 31. Flood-frequency data were computed only through the 1978 water year (except for site 06013500), because data for the 1979 year were not in storage at the time the data were retrieved from the computer, and no significant flooding occurred during 1979 to affect the frequency curves.

Station description

The station description consists of location, drainage area, period of record, revisions of previously published records, type and history of gages, remarks on regulation and diversions, average discharge, and extremes of discharge. The location and the drainage area are obtained from the most accurate maps available. River mileage, given under "LOCATION" for some stations, is that determined and used by the U.S. Army Corps of Engineers. Periods for which published records are available for the present station or for stations generally equivalent to the present one are given under "PERIOD OF RECORD."

Previously published streamflow records of some stations have been in error on the basis of data or information obtained later. Revisions of such records are usually published along with the current records in one of the annual or compilation reports. To make such revised records readily available, a section entitled "REVISED RECORDS" has been added to the appropriate station descriptions. Listed therein are all the reports in which revisions have been published, each followed by the year for which data are revised in that report. The year shown is a water year; for instance, 1965 indicates the water year October 1, 1964, to September 30, 1965. If no daily, monthly, or annual figures of discharge are affected by the revision, the fact is noted after the water year by "(M)," which means that only the instantaneous maximum discharge was revised. If the drainage area has been revised, the report in which the revised area was first published is identified. For all stations for which cubic feet per second per square mile and runoff in inches have been published, a revision of the drainage area necessitates corresponding revision of all values based on the drainage area.

The type of gage currently in use, the datum of the present gage above sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of record are given under "GAGE." In references to datum of gage, the phrase National Geodetic Vertical Datum of 1929 (NGVD) denotes a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada; this datum was formerly called "mean sea level datum of 1929."

Information pertaining to the accuracy of the discharge records and to conditions that affect the natural flow at the gaging station is given under "REMARKS." The average discharge for the number of years indicated is given under "AVERAGE DISCHARGE." The "EXTREMES FOR PERIOD OF RECORD" section gives the momentary maximum and minimum discharges and gage heights for the period of record.

Tabulations

Tables presented for the stations include monthly and annual mean discharge, magnitude and probability of instantaneous peak flow (flood frequency), magnitude and probability of annual low flow, magnitude and probability of annual high flow, and duration of daily mean flow. The monthly and annual data were processed through the computer program Daily Values Monthly and Annual Statistics (Program W4422). Low-flow, high-flow, and flow-duration data were processed using U.S. Geological Survey computer program Daily Value Statistics (Program A969). Flood-freqeuncy data were processed using computer program J407.

Monthly and annual mean discharge

The monthly and annual mean discharge tabulations show for the period of record: the maximum and minimum mean monthly and annual values, the mean (monthly and annual), the standard deviation from the mean, the coefficient of variation (ratio of the standard deviation to the mean), and the percentage of annual runoff for each monthly mean.

Flood frequency

The flood-flow tabulations show the data necessary to plot flood-frequency curves based on the period of record using the log-Pearson Type III frequency distribution. The flood-frequency curve is a graph showing the relationship between recurrence interval as abscissa and flood magnitude as ordinate. For stations with less than 25 years record, a generalized (regional) skew from the U.S. Water Resources Council (1977) was used. For stations with more than 25 years record, the generalized skew was weighted with the station skew in accordance with procedures recommended by the U.S. Water Resources Council (1977). The skew used is listed at the bottom of the flood-frequency table. If no skew is listed, the data were analyzed by hand-plotted frequency data because the skewed data were unrealistic. The flood magnitudes determined from the log-Pearson Type III analysis were weighted with values determined from regional regression equations (Charles Parrett, U.S. Geological Survey, written commun., 1980) to produce the values listed. The table lists the magnitude and probability of instantaneous peak flow for recurrence interval, in years, and exceedence probability, in percent each year, for 1.25 years (80 percent), 2 years (50 percent), 5 years (20 percent), 10 years (10 percent), 25 years (4 percent), 50 years (2 percent), and 100 years (1 percent). The 100-year recurrence interval was estimated for all stations, except those just downstream from dams.

Low-flow frequency

The low-flow tabulations show the data necessary to plot standard low-flow frequency curves using the log-Pearson Type III frequency distribution. The low-flow

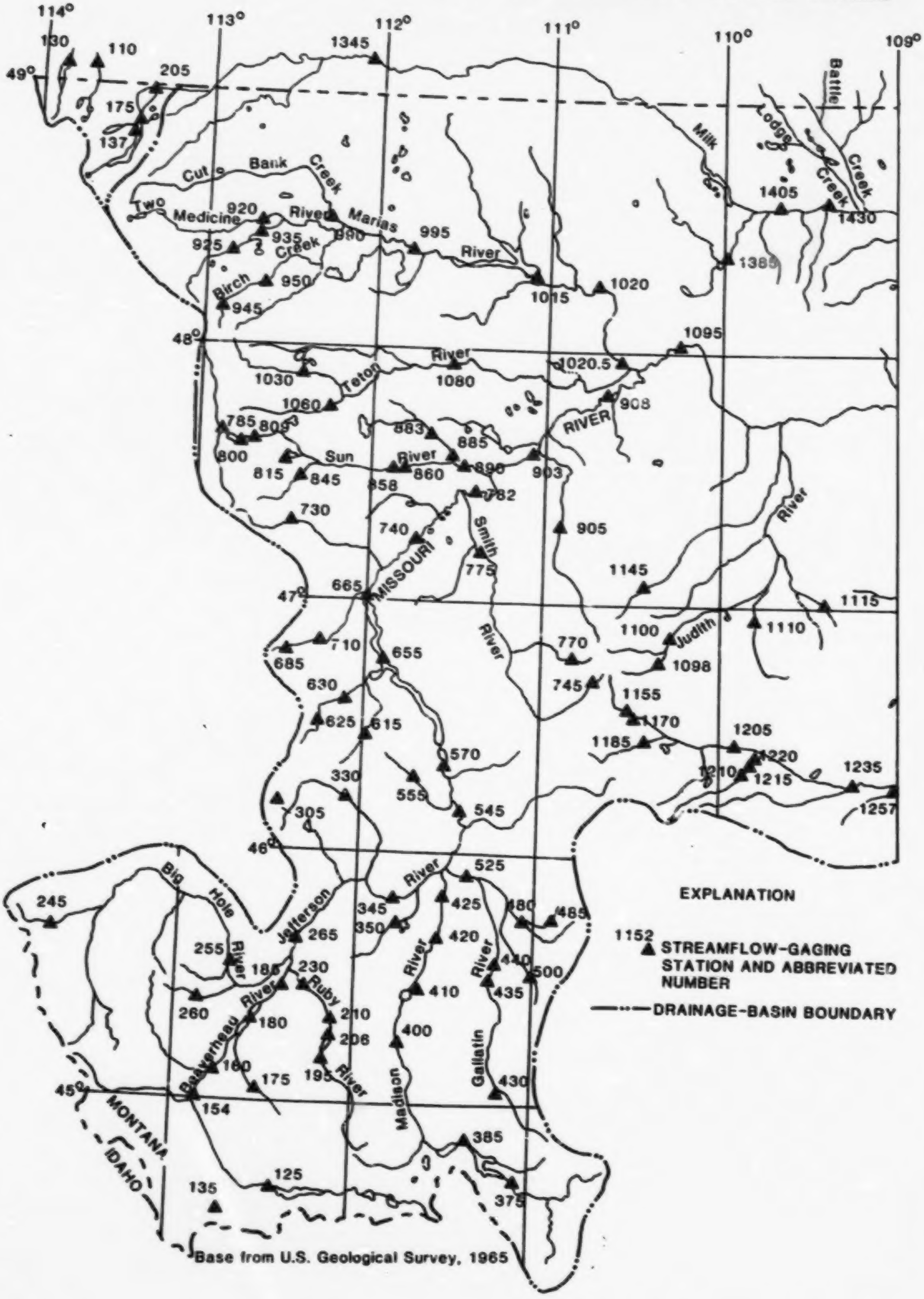
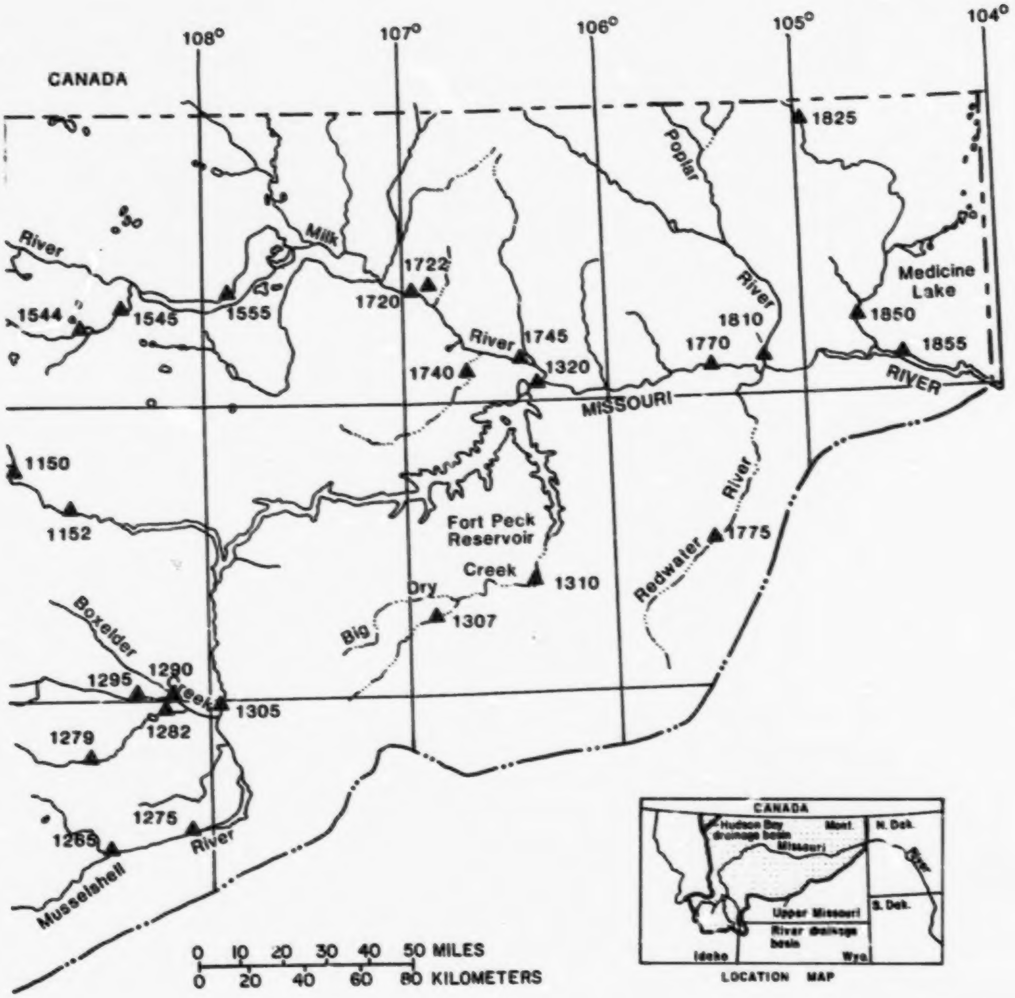

114°
113°
112°
111°
110°
109°
49°
48°
47°
46°
45°
Cut Bank Creek
Two Medicine River
Marias River
Birch Creek
Milk
Lodge Creek
Battle Creek
Teton River
Sun River
MISSOURI
RIVER
Smith River
Judith
River
Big Hole River
Jefferson
Beaverhead River
Ruby River
Madison River
Gallatin River
MONTANA
IDAHO
130
110
205
175
137
1345
920
935
925
980
995
950
945
1015
1020
1385
1405
1430
1095
1030
1080
1020.5
1060
908
785
803
800
883
885
815
845
858
860
890
903
782
730
740
775
905
1145
665
1115
1110
1100
685
710
655
770
1098
745
1155
630
625
615
1170
1185
1205
1220
1210
1215
1235
570
330
555
305
545
1257
525
245
345
425
480
485
350
420
255
265
185
230
440
500
410
435
260
180
210
206
400
160
175
195
430
154
385
135
125
375
EXPLANATION
1152
STREAMFLOW-GAGING STATION AND ABBREVIATED NUMBER
DRAINAGE-BASIN BOUNDARY
Base from U.S. Geological Survey, 1965

Figure 1.—Location of


108°
107°
106°
105°
104°
CANADA
River
Milk
River
MISSOURI
RIVER
Poplar
River
Medicine Lake
Fort Peck Reservoir
Big Dry Creek
Redwater River
Boxelder Creek
Musselshell River
1544
1545
1555
1720
1722
1740
1745
1320
1770
1810
1825
1850
1855
1150
1152
1775
1310
1307
1295
1290
1282
1279
1305
1275
1265
0 10 20 30 40 50 MILES
0 20 40 60 80 KILOMETERS
CANADA
Hudson Bay drainage basin
Mont.
Missouri
N. Dak.
River
Upper Missouri River drainage basin
S. Dak.
Idaho
Wyo.
LOCATION MAP

streamflow-gaging stations.

frequency curve is a graph showing the relationship between recurrence interval as abscissa and low-flow data as ordinate. The tabulations show lowest mean discharge for consecutive periods of 1, 3, 7, 14, 30, 60, 90, 120, and 183 days for indicated recurrence interval, in years, and non-exceedence probability for 2 years (50 percent), 5 years (20 percent), 10 years (10 percent), 20 years (5 percent), 50 years (2 percent), and 100 years (1 percent). Recurrence intervals generally were extended to only twice the period of record. Records of more than 40 years were extended to the 100-year (1-percent) interval.

High-flow frequency

The high-flow tabulations show the data necessary to plot standard high-flow frequency curves using the log-Pearson Type III frequency distribution. The high-flow frequency curve is a graph showing the relationship between recurrence interval as abscissa and high-flow data as ordinate. The tabulations show the highest mean discharge for consecutive periods of 1, 3, 7, 15, 30, 60, and 90 days for recurrence intervals, in years, and exceedence probability, in percent, for 2 years (50 percent), 5 years (20 percent), 10 years (10 percent), 25 years (4 percent), 50 years (2 percent), and 100 years (1 percent). The criteria for extending records of high-flow data were the same as for the low-flow data.

Flow duration

The flow-duration tabulations list the data necessary to plot a standard flow-duration curve. The flow-duration curve is a cumulative frequency curve that shows the percentage of time that specified discharges are equaled or exceeded. The tabulations show the discharge, in cubic feet per second, which was equaled or exceeded 1, 5, 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 95, 98, 99, 99.5, and 99.9 percent of the time.

Effects of regulation

The natural flows of many streams in the upper Missouri River basin are altered by regulation by dams or diversions for irrigation. The reader needs to be aware that for many stations these conditions exist and the reported data reflect the pattern of operation of regulation and diversion. The "REMARKS" section of the station description indicates known regulations and diversions; periods of natural flow were segregated from periods of flow affected by regulation by dams or major diversion only at stations 05020500, 06103000, 06127900, 06132000, 06140500, and 06177000. If this information is needed for other sites, special requests can be directed to the District office in Helena, Mont. Depending upon the number of sites involved, a cost for computer services may be charged.

REFERENCE

U.S. Water Resources Council, 1977, Guidelines for determining flood flow frequency [revised]: Hydrology Committee Bulletin 17A, 162 p.

LIST OF STREAMFLOW-GAGING STATIONS, IN DOWNSTREAM ORDER

Station number | Station name | Page

HUDSON BAY BASIN

Lake Winnepeg (head of Nelson River):

Saskatchewan River basin

Station number	Station name	Page
05011000	Belly River near Mountain View, Alberta	12
05013000	Waterton River near Waterton Park, Alberta	13
05013700	St. Mary River above Swiftcurrent Creek, near Babb	14
05017500	St. Mary River near Babb	15
05020500	St. Mary River at international boundary	16

MISSOURI RIVER BASIN

Red Rock River basin

Station number	Station name	Page
06012500	Red Rock River below Lima Reservoir, near Monida	19
06013500	Big Sheep Creek below Muddy Creek, near Dell	20

Beaverhead River basin

Station number	Station name	Page
06015400	Beaverhead River near Grant	21
06016000	Beaverhead River at Barretts	22
06017500	Blacktail Creek near Dillon	25
06018000	Beaverhead River near Dillon	26
06018500	Beaverhead River near Twin Bridges	27

Ruby River basin

Station number	Station name	Page
06019500	Ruby River above reservoir, near Alder	28
06020600	Ruby River below reservoir, near Alder	29
06021000	Ruby River near Alder	30
06023000	Ruby River near Twin Bridges	31

Big Hole River basin

Station number	Station name	Page
06024500	Trail Creek near Wisdom	32
06025500	Big Hole River near Melrose	33
06026000	Birch Creek near Glen	34
06026500	Jefferson River near Twin Bridges	35

Boulder River basin

Station number	Station name	Page
06030500	Boulder River above Rock Creek, near Basin	36
06033000	Boulder River near Boulder	37
06034500	Jefferson River at Sappington	38

LIST OF STREAMFLOW-GAGING STATIONS, IN DOWNSTREAM ORDER--Continued

Station number — Station name — Page

MISSOURI RIVER BASIN--Continued

Willow Creek basin

06035000 Willow Creek near Harrison 39

Madison River basin

06037500 Madison River near West Yellowstone 40
06038500 Madison River below Hebgen Lake, near Grayling 41
06040000 Madison River near Cameron 42
06041000 Madison River below Ennis Lake, near McAllister 43
06042000 Madison River below Cherry Creek, near Norris 44
06042500 Madison River near Three Forks 45

Gallatin River basin

06043000 Taylor Creek near Grayling 46
06043500 Gallatin River near Gallatin Gateway 47
06044000 Gallatin River near Salesville 48
06048000 East Gallatin River at Bozeman 49
06048500 Bridger Creek near Bozeman 50
06050000 Hyalite Creek at Hyalite ranger station, near Bozeman 51
06052500 Gallatin River at Logan 52
06054500 Missouri River at Toston 53
06055500 Crow Creek near Radersburg 54
06057000 Missouri River near Townsend 55

Prickly Pear Creek basin

06061500 Prickly Pear Creek near Clancy 56
06062500 Tenmile Creek near Rimini 57
06063000 Tenmile Creek near Helena 58
06065500 Missouri River below Hauser Lake Dam, near Helena 59
06066500 Missouri River below Holter Dam, near Wolf Creek 60

Little Prickly Pear Creek basin

06068500 Little Prickly Pear Creek near Marysville 61
06071000 Little Prickly Pear Creek near Canyon Creek 62

Dearborn River basin

06073000 Dearborn River near Clemons 63
06074000 Missouri River at Cascade 64

Smith River basin

06074500 Smith River near White Sulphur Springs 65

LIST OF STREAMFLOW-GAGING STATIONS, IN DOWNSTREAM ORDER--Continued

Station number — Station name — Page

MISSOURI RIVER BASIN--Continued

Smith River basin--Continued

06077000 Sheep Creek near White Sulphur Springs 66
06077500 Smith River near Eden 67
06078200 Missouri River near Ulm 68

Sun River basin

06078500 North Fork Sun River near Augusta 69
06080000 Sun River near Augusta 70
06080900 Sun River below diversion dam, near Augusta 71
06081500 Willow Creek near Augusta 72
06084500 Elk Creek at Augusta 73
06085800 Sun River at Sims 74
06086000 Sun River at Fort Shaw 75
06088300 Muddy Creek near Vaughn 76
06088500 Muddy Creek at Vaughn 77
06089000 Sun River near Vaughn 78
06090300 Missouri River near Great Falls 79

Belt Creek basin

06090500 Belt Creek near Monarch 80
06090800 Missouri River at Fort Benton 81

Marias River basin

06092000 Two Medicine River near Browning 82
06092500 Badger Creek near Browning 83
06094500 Birch Creek at Swift Dam, near Dupuyer 84
06095000 Birch Creek near Dupuyer 85
06099000 Cut Bank Creek at Cut Bank 86
06099500 Marias River near Shelby 87
06101500 Marias River near Chester 88
06102000 Marias River near Brinkman 89
06102050 Marias River near Loma 90
06103000 Teton River at Strabane 91
06106000 Deep Creek near Choteau 92
06108000 Teton River near Dutton 93
06109500 Missouri River at Virgelle 94

Judith River basin

06109800 South Fork Judith River near Utica 95
06110000 Judith River near Utica 96
06111000 Ross Fork Creek near Hobson 97
06111500 Big Spring Creek near Lewistown 98

LIST OF STREAMFLOW-GAGING STATIONS, IN DOWNSTREAM ORDER—Continued

MISSOURI RIVER BASIN—Continued

Judith River basin—Continued

Station number	Station name	Page
06114500	Wolf Creek near Stanford	99
06115000	Missouri River at Powerplant Ferry, near Zortman	100
06115200	Missouri River near Landusky	101

Musselshell River basin

Station number	Station name	Page
06115500	North Fork Musselshell River near Delpine	102
06117000	Checkerboard Creek at Delpine	103
06118500	South Fork Musselshell River above Martinsdale	104
06120500	Musselshell River at Harlowton	105
06121000	American Fork near Harlowton	106
06121500	Lebo Creek near Harlowton	107
06122000	American Fork below Lebo Creek, near Harlowton	108
06123500	Musselshell River near Ryegate	109
06125700	Big Coulee near Lavina	110
06126500	Musselshell River near Roundup	111
06127500	Musselshell River at Musselshell	112
06127900	Flatwillow Creek near Flatwillow	113
06128200	Flatwillow Creek near Winnett	116
06129000	Box Elder Creek near Winnett	117
06129500	McDonald Creek at Winnett	118
06130500	Musselshell River at Mosby	119

Dry Creek basin

Station number	Station name	Page
06130700	Sand Creek near Jordan	120

Big Dry Creek basin

Station number	Station name	Page
06131000	Big Dry Creek near Van Norman	121
06132000	Missouri River below Fort Peck Dam	122

Milk River basin

Station number	Station name	Page
06134500	Milk River at Milk River, Alberta	124
06138500	Big Sandy Creek near Box Elder	125
06140500	Milk River at Havre	126
06143000	Milk River at Lohman	129
06154400	Peoples Creek near Hays	130
06154500	Peoples Creek near Dodson	131
06155500	Milk River at Malta	132
06172000	Milk River at Vandalia	133
06172200	Buggy Creek near Tampico	134
06174000	Willow Creek near Glasgow	135
06174500	Milk River at Nashua	136

LIST OF STREAMFLOW-GAGING STATIONS, IN DOWNSTREAM ORDER--Continued

Station number — Station name — Page

MISSOURI RIVER BASIN--Continued

Milk River basin--Continued

06177000 Missouri River near Wolf Point. 137

Redwater River basin

06177500 Redwater River at Circle. 140

Poplar River basin

06181000 Poplar River near Poplar. 141

Big Muddy Creek basin

06182500 Big Muddy Creek at Daleview 142
06185000 Big Muddy Creek near Culbertson 143
06185500 Missouri River near Culbertson. 144

STREAMFLOW-GAGING-STATION DESCRIPTIONS AND STATISTICAL TABLES

05011000 BELLY RIVER NEAR MOUNTAIN VIEW, ALBERTA

(International gaging station)

LOCATION.--Lat 49°06'00", long 113°41'48", in NE¼ sec.5, T.2, R.28 W., fourth meridian, in Alberta, Hydrologic Unit 10010001, on right bank 2 mi (3 km) downstream from intake of Mountain View Irrigation District Canal, 5 mi (8 km) southwest of Mountain View, and 7 mi (11 km) north of international boundary.

DRAINAGE AREA.--121 mi^2 (313 km^2).

PERIOD OF RECORD.--November 1911 to September 1978. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 4,342.88 ft (1,323.710 m) National Geodetic Vertical Datum of 1929 (Irrigation Surveys datum). November 1911 to Apr. 6, 1949, nonrecording gage at site 20 ft (6 m) upstream at same datum. Apr. 7, 1949, to June 19, 1975, water-stage recorder at present site at datum 2.02 ft (0.616 m) higher.

REMARKS.--Natural flow of stream affected by diversion to Mountain View Irrigation District Canal 2 mi (3 km) upstream from station.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

AVERAGE DISCHARGE.--22 years (1912-34), prior to operation of Mountain View Irrigation District Canal, 327 ft^3/s (9.261 m^3/s), 236,700 acre-ft/yr (292 hm^3/yr); 44 years (1934-78), 308 ft^3/s (8.723 m^3/s), 223,100 acre-ft/yr (275 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,400 ft^3/s (464 m^3/s) June 8, 1964, gage height, 11.40 ft (3.475 m), from floodmarks, datum then in use; maximum gage height, 12.13 ft (3.697 m) June 20, 1975, from floodmarks; minimum discharge, 0.50 ft^3/s (0.014 m^3/s) Oct. 22, 1963, result of upstream diversion.

MONTHLY AND ANNUAL MEAN DISCHARGES 1913-78

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	488	46	176	103	.58	4.7
NOVEMBER	437	41	128	63	.49	3.4
DECEMBER	288	27	86	37	.43	2.3
JANUARY	192	25	67	27	.39	1.8
FEBRUARY	203	26	69	35	.51	1.8
MARCH	213	29	70	32	.46	1.8
APRIL	715	61	207	117	.56	5.5
MAY	1300	334	788	195	.25	21
JUNE	2450	340	1130	417	.37	30
JULY	1280	141	604	243	.40	16.1
AUGUST	521	117	260	91	.35	6.9
SEPTEMBER	515	77	177	92	.52	4.7
ANNUAL	504	146	314	72	.23	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1913-78

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	33	22	18	14	11	8.8
3	35	25	20	16	13	11
7	38	26	23	20	16	14
14	42	32	28	24	20	18
30	48	38	33	29	25	23
60	55	43	37	33	28	26
90	60	47	41	37	33	30
120	68	52	46	41	36	33
183	93	70	60	53	46	41

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1908-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1230	1970	2730	3290	4900	9110	16100

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1913-78

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1720	2710	3630	5200	6730	8650
3	1670	2490	3180	4220	5140	6200
7	1540	2160	2580	3110	3520	3930
15	1400	1870	2140	2420	2610	2780
30	1240	1600	1780	1960	2070	2160
60	1050	1300	1420	1530	1600	1640
90	868	1070	1160	1250	1290	1330

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1913-78

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1850	1200	880	659	491	300	195	139	105	82	64	50	41	32	28	24	18

05013000 WATERTON RIVER NEAR WATERTON PARK, ALBERTA

(International gaging station)

LOCATION.--Lat 49°06'47", long 113°50'18", in NE¼ sec.8, T.2, R.29 W., fourth meridian, in Alberta, Hydrologic Unit 10010001, on right bank 300 ft (91 m) downstream from highway bridge, 0.3 mi (0.5 km) upstream from Crooked Creek, and 5.3 mi (8.5 km) northeast of Waterton Park.

DRAINAGE AREA.--238 mi² (616 km²).

PERIOD OF RECORD.--June to September 1908, April to November 1909, April to November 1910, May to October 1911, March 1912 to May 1931, September 1932, June to August 1933, April 1948 to September 1978. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1908(M).

GAGE.--Water-stage recorder. Datum of gage is 4,154.19 ft (1,266.197 m) National Geodetic Vertical Datum of 1929 (Irrigation Surveys datum). Prior to Feb. 7, 1917, nonrecording gages at various sites and datums within 200 ft (61 m) of present site. Feb. 7, 1917, to Aug. 26, 1933, and Mar. 19, 1948, to Mar. 18, 1949, nonrecording gage on downstream side of old bridge 200 ft (61 m) upstream at present datum.

REMARKS.--No regulation or diversions.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

AVERAGE DISCHARGE.--48 years (1912-30, 1948-78), 672 ft³/s (19.03 m³/s), 38.34 in/yr (974 mm/yr), 486,900 acre-ft/yr (600 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,700 ft³/s (728 m³/s) June 9, 1964, gage height, 9.22 ft (2.810 m); minimum observed, 14 ft³/s (0.40 m³/s) Feb. 4, 1955, caused by temporary storage behind ice jam upstream.

MONTHLY AND ANNUAL MEAN DISCHARGES 1913-30, 1949-78

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	944	101	326	219	.67	4.0
NOVEMBER	580	59	251	121	.48	3.1
DECEMBER	435	46	177	84	.47	2.2
JANUARY	390	73	144	59	.41	1.8
FEBRUARY	304	64	129	45	.35	1.6
MARCH	364	66	130	54	.41	1.6
APRIL	943	91	373	189	.51	4.6
MAY	2980	927	1780	453	.26	22.1
JUNE	4980	673	2780	881	.32	34.5
JULY	2440	321	1260	556	.44	15.6
AUGUST	748	208	403	141	.35	5.0
SEPTEMBER	855	124	301	177	.59	3.7
ANNUAL	980	332	672	132	.20	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1913-30, 1949-78

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	81	62	52	44	36	31
3	85	68	59	52	45	40
7	88	71	63	56	50	45
14	93	75	66	59	52	47
30	99	80	70	63	56	51
60	109	86	76	68	61	56
90	119	95	84	76	68	63
120	132	104	92	83	75	70
183	162	133	117	98	83	74

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1913-30, 1949-78

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	4100	6160	8020	11100	14000	17500
3	4050	5810	7200	9220	10900	12900
7	3850	5180	6040	7100	7880	8640
15	3550	4540	5050	5580	5900	6180
30	3140	3830	4130	4410	4550	4660
60	2540	3010	3210	3370	3460	3520
90	2020	2390	2540	2670	2740	2790

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1908-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
3040	4630	5910	7080	9130	14900	24900

WEIGHTED SKEW = --

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1913-30, 1949-78

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
4390	2920	2060	1440	958	537	347	246	190	152	125	101	85	72	66	59	42

05013700 ST. MARY RIVER ABOVE SWIFTCURRENT CREEK, NEAR BABB, MT

LOCATION.--Lat 48°51'00", long 113°24'50", in NE¼ sec.27, T.36 N., R.14 W., Glacier County, Hydrologic Unit 10010002, 0.5 mi (0.80 km) downstream from Lower St. Mary Lake, 1 mi (2 km) southeast of Babb, and 2 mi (3 km) upstream from Swiftcurrent Creek.

DRAINAGE AREA.--177 mi² (458 km²).

PERIOD OF RECORD.--January 1902 to September 1915. Published as "near St. Mary," 1902-04, and as "near Babb," 1905-15.

REVISED RECORD.--WSP 1308: 1909-10.

GAGE.--Nonrecording gage. Altitude of gage is 4,460 ft (1,359 m), from topographic map.

REMARKS.--No regulation or diversion.

AVERAGE DISCHARGE.--13 years (1902-15), 540 ft³/s (15.29 m³/s), 391,200 acre-ft/yr (482 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 7,980 ft³/s (226 m³/s) June 5, 1908, gage height, 9.4 ft (2.89 m), estimated, from rating curve extended above 3,700 ft³/s (105 m³/s); minimum observed, 4 ft³/s (0.11 m³/s) Feb. 14, 1911, gage height, 0.25 ft (0.076 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1903-15

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	646	174	345	148	.43	5.3
NOVEMBER	666	81	269	161	.60	4.2
DECEMBER	305	54	148	78	.53	2.3
JANUARY	120	45	80	22	.28	1.2
FEBRUARY	140	40	83	26	.31	1.3
MARCH	190	50	105	46	.43	1.6
APRIL	519	129	237	121	.51	3.7
MAY	1310	479	946	239	.25	14.6
JUNE	3400	1060	1990	772	.39	30.8
JULY	2100	793	1230	385	.31	19
AUGUST	894	363	622	154	.25	9.6
SEPTEMBER	694	255	411	145	.35	6.4
ANNUAL	754	388	540	117	.22	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1903-15

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	58	27	15	8.3	-----	-----
3	52	36	30	26	-----	-----
7	55	39	33	29	-----	-----
14	62	47	40	36	-----	-----
30	65	51	45	41	-----	-----
60	72	58	52	47	-----	-----
90	80	64	56	51	-----	-----
120	100	76	64	56	-----	-----
183	163	121	104	91	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1902-15

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1700	2480	3870	5020	6770	8320	10100

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1903-15

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	2290	3600	4810	6840	-----	-----
3	2250	3530	4710	6670	-----	-----
7	2180	3310	4290	5810	-----	-----
15	2070	3010	3740	4800	-----	-----
30	1910	2630	3140	3[illegible]	-----	-----
60	1620	2100	2400	2780	-----	-----
90	1370	1730	1960	2250	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1903-15

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
3110	1880	1410	1100	884	605	412	273	192	135	95	70	57	46	42	37	27

05017500 ST. MARY RIVER NEAR BABB, MT

LOCATION.--Lat 48°50'00", long 113°25'08", in NW¼NW¼SE¼ sec.34, T.36 N., R.14 W., Glacier County, Hydrologic Unit 10010002, on right bank 0.7 mi (1.1 km) upstream from outlet of Lower St. Mary Lake and 2.0 mi (3.2 km) southeast of Babb.

DRAINAGE AREA.--278 mi² (720 km²).

PERIOD OF RECORD.--July 1901 to October 1902, May 1910 to September 1925, October 1950 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as "at Main" 1901-2, and as "below Swiftcurrent Creek, at Babb" 1910-15. Records for April 1902 to September 1915, May 1929 to September 1950 at sites about 1.5 mi (2.4 km) downstream not equivalent because flow of Swiftcurrent Creek not included 1905-15 and because diversion by St. Mary Canal not included 1929-50.

REVISED RECORDS.--WSP 1308: 1913-14, 1920, 1922-24. WSP 1508: 1902.

GAGE.--Water-stage recorder. Datum of gage is 4,468.13 ft (1,361.886 m) National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1915, water-stage recorder or nonrecording gages at several sites about 3.8 mi (6.1 km) downstream at different datums. Oct. 1, 1915, to Sept. 30, 1925, water-stage recorder or nonrecording gages at several sites within 1.5 mi (2.4 km) downstream at different datums.

REMARKS.--Entire flow of Swiftcurrent Creek below Lake Sherburne is diverted into Lower St. Mary Lake above station. Flow of Swiftcurrent Creek regulated by Lake Sherburne since 1919. October 1950 to September 1976, monthly discharge and runoff figures adjusted for change in contents (adjusted for evaporation October 1961 to September 1976) in Lake Sherburne.

AVERAGE DISCHARGE.--45 years (1901-2, 1910-25, 1950-79), 790 ft³/s (22.37 m³/s), 572,400 acre-ft/yr (706 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,500 ft³/s (467 m³/s) June 9, 1964, gage height, 12.96 ft (3.950 m), from high-water mark in well, from rating curve extended above 6,100 ft³/s (173 m³/s) on basis of slope-area measurement of peak flow; minimum, 26 ft³/s (0.74 m³/s) Jan. 5, 1963, Jan. 8, 1958.

MONTHLY AND ANNUAL MEAN DISCHARGES 1902, 1911-25, 1951-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	1320	121	442	281	.64	4.7
NOVEMBER	773	59	259	146	.56	2.7
DECEMBER	390	34	160	71	.45	1.7
JANUARY	626	55	129	88	.68	1.4
FEBRUARY	213	51	120	45	.37	1.3
MARCH	349	52	117	59	.50	1.2
APRIL	797	85	378	193	.51	4.0
MAY	2760	670	1740	466	.27	18.4
JUNE	4810	1430	2680	725	.27	28.4
JULY	3040	687	1670	501	.30	17.6
AUGUST	1610	573	1010	197	.19	10.7
SEPTEMBER	1240	195	737	289	.39	7.8
ANNUAL	1070	444	790	127	.16	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1912-25, 1952-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	66	49	41	35	29	26
3	69	52	44	38	32	28
7	71	54	45	39	33	29
14	75	57	48	41	34	30
30	83	63	54	47	40	35
60	93	71	62	54	47	43
90	102	79	69	62	55	51
120	116	90	79	71	64	59
183	186	136	115	99	84	75

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1902-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
2780	3770	5510	6920	9030	10900	13000

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1902, 1911-25, 1951-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	3790	5560	7120	9530	11700	14300
3	3760	5370	6640	8490	10100	11800
7	3580	4870	5760	6950	7870	8830
15	3290	4280	4880	5600	6110	6600
30	2910	3620	4030	4480	4780	5050
60	2430	2910	3190	3490	3700	3880
90	2070	2430	2620	2830	2960	3080

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1902, 1911-25, 1951-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
4300	2790	2030	1620	1350	1010	680	349	216	151	116	88	73	60	52	46	31

05020500 ST. MARY RIVER AT INTERNATIONAL BOUNDARY

(International gaging station)

LOCATION.--Lat 49°00'12", long 113°18'48", in SW¼ sec.5, T.1, R.25 W., fourth meridian, in Alberta, Hydrologic Unit 10010002, on right bank 0.4 mi (0.6 km) north of international boundary, 2.5 mi (4.0 km) downstream from Boundary Creek, 7.5 mi (12.1 km) southwest of Kimball, Alberta, and 11.5 mi (18.5 km) northeast of Babb, Mt.

DRAINAGE AREA.--469 mi^2 (1,215 km^2).

PERIOD OF RECORD.--September 1902 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as "near Cardston, Alberta" and "at Cook's Ranch, Alberta" 1902-12 and as "near Kimball, Alberta" 1913-55.

REVISED RECORDS.--WSP 1308: 1902, 1908-12. WSP 1508: 1902, 1908-9.

GAGE.--Water-stage recorder. Altitude of gage is 4,120 ft (1,250 m), from topographic map. Prior to Jan 1, 1913, nonrecording gages at two sites within 0.3 mi (0.5 km) of present site at different datums. Jan. 1, 1913, to Oct. 25, 1955, water-stage recorder at several sites about 8 mi (13 km) downstream from present site at various datums. Oct. 26, 1955, to Mar. 23, 1965, water-stage recorder at site 100 ft (30 m) upstream at datum 2 ft (0.6 m) higher.

REMARKS.--Since 1917, St. Mary Canal has diverted water from the river near Babb, Mt. to North Fork Milk River. Some regulation by Lake Sherburne or Swiftcurrent Creek.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

AVERAGE DISCHARGE.--14 years (1902-16), prior to operation of St. Mary Canal, 1,003 ft^3/s (28.40 m^3/s), 726,700 acre-ft/yr (896 hm^3/yr); 63 years (1916-79), 704 ft^3/s (19.94 m^3/s), 510,000 acre-ft/yr (629 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,000 ft^3/s (1,133 m^3/s) June 5, 1908, gage height, 12.75 ft (3.886 m), from floodmarks, site and datum then in use, from rating curve extended above 6,000 ft^3/s (170 m^3/s); minimum daily, 16 ft^3/s (0.45 m^3/s) Nov. 29, 1936.

MONTHLY AND ANNUAL MEAN DISCHARGES 1903-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	1590	115	483	287	.59	5.3
NOVEMBER	1100	81	335	203	.61	3.7
DECEMBER	503	75	206	92	.45	2.3
JANUARY	729	56	159	96	.61	1.7
FEBRUARY	411	42	155	70	.45	1.7
MARCH	516	77	189	97	.51	2.1
APRIL	1330	136	481	255	.53	5.3
MAY	3570	678	1780	611	.34	19.6
JUNE	7500	694	2770	1320	.48	30.5
JULY	3460	549	1380	692	.50	15.2
AUGUST	1460	266	625	261	.42	6.9
SEPTEMBER	1510	185	518	300	.58	5.7
ANNUAL	1350	316	758	245	.32	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1904-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	84	54	41	32	24	19
3	88	58	46	37	29	24
7	93	64	52	43	35	30
14	99	71	59	51	43	38
30	108	80	68	60	53	48
60	122	94	83	76	69	66
90	137	105	92	84	76	72
120	157	118	102	92	81	75
183	236	168	140	121	102	91

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1903-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
2490	3860	6700	9380	14000	18400	24000

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1903-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	3860	6350	8410	11500	14300	17400
3	3800	6130	7960	10600	12800	15300
7	3500	5580	6980	8830	10300	11700
15	3290	4880	5870	7050	7870	8640
30	2890	4130	4850	5650	6180	6650
60	2360	3260	3760	4320	4680	5010
90	1940	2640	3050	3510	3820	4100

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1903-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
4860	2880	2000	1460	1130	719	503	370	275	205	156	117	95	76	62	53	36

BEST DOCUMENT AVAILABLE

05020500 ST. MARY RIVER AT INTERNATIONAL BOUNDARY--Continued

PERIOD OF RECORD.--1917-79.

REMARKS.--Data below based on period of record after St. Mary Canal began diverting water from St. Mary River.

MONTHLY AND ANNUAL MEAN DISCHARGES 1917-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	1590	115	450	290	.65	5.3
NOVEMBER	937	81	303	180	.59	3.6
DECEMBER	503	75	197	94	.48	2.3
JANUARY	729	56	160	105	.66	1.9
FEBRUARY	411	42	153	70	.46	1.8
MARCH	512	77	181	92	.51	2.1
APRIL	1330	136	451	254	.56	5.3
MAY	3570	678	1750	656	.38	20.7
JUNE	5940	694	2560	1180	.46	30.4
JULY	2680	549	1210	565	.47	14.4
AUGUST	1040	286	536	157	.29	6.4
SEPTEMBER	1510	185	471	277	.59	5.6
ANNUAL	1290	316	704	216	.31	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1918-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	77	49	37	30	22	18
3	81	54	42	35	27	23
7	86	59	48	41	33	29
14	93	67	56	49	41	37
30	104	76	66	58	52	48
60	118	91	81	75	69	65
90	131	100	89	82	75	71
120	150	113	98	89	80	74
183	221	158	134	117	100	91

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1917-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	3870	6100	7720	9970	11600	13400
3	3790	5890	7320	9170	10500	11900
7	3540	5330	6460	7820	8780	9680
15	3170	4640	5500	6460	7090	7660
30	2760	3890	4520	5200	5640	6620
60	2220	3060	3530	4040	4380	4670
90	1810	2450	2920	3240	3520	3770

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1917-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
4500	2710	1840	1330	1010	654	459	347	259	194	148	112	91	73	61	51	34

PERIOD OF RECORD.--1903-16.

REMARKS.--Data below based on period of record prior to St. Mary Canal.

MONTHLY AND ANNUAL MEAN DISCHARGES 1903-16

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	1040	221	630	226	.36	5.2
NOVEMBER	1100	130	476	296	.52	4.0
DECEMBER	436	157	242	78	.32	2.0
JANUARY	224	90	153	38	.25	1.3
FEBRUARY	377	75	164	74	.45	1.4
MARCH	516	120	229	114	.50	1.9
APRIL	1190	304	617	221	.36	5.1
MAY	2490	1220	1910	331	.17	15.9
JUNE	7500	2240	3680	1590	.43	30.7
JULY	3460	1180	2140	719	.34	17.8
AUGUST	1460	580	1030	261	.25	8.5
SEPTEMBER	1300	371	732	316	.43	6.1
ANNUAL	1350	646	1000	225	.23	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1904-16

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	113	88	78	69	-----	-----
3	116	90	79	70	-----	-----
7	123	95	82	72	-----	-----
14	126	97	83	74	-----	-----
30	128	100	87	78	-----	-----
60	145	114	99	88	-----	-----
90	162	131	117	107	-----	-----
120	187	150	133	121	-----	-----
183	321	239	200	171	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
--	--	--	--	--	--	--

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1903-16

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	4000	7140	10900	19000	-----	-----
3	3920	6840	10200	17300	-----	-----
7	3840	6360	8930	13700	-----	-----
15	3710	5650	7330	10000	-----	-----
30	3470	4930	6030	7580	-----	-----
60	2940	3870	4500	5330	-----	-----
90	2500	3200	3680	4316	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1903-16

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
5720	3360	2500	2000	1580	1100	758	588	386	246	188	149	120	95	86	79	72

06012500 RED ROCK RIVER BELOW LIMA RESERVOIR, NEAR MONIDA, MT

LOCATION.--Lat 44°39'22", long 112°22'14", in NE¼SE¼SE¼ sec. 31, T.13 S., R.6 W., Beaverhead County, Hydrologic Unit 10020001, on right bank just downstream from Lima Reservoir, 7 mi (11 km) northwest of Monida.

DRAINAGE AREA.--570 mi^2 (1,476 km^2).

PERIOD OF RECORD.--January 1911 to December 1918, April 1919, May 1925 to October 1933, April 1934 to September 1935, May 1936 to October 1938, May 1939 to September 1969, June 1974 to current year (no winter records). Monthly discharge only for some periods, published in WSP 1309. Prior to October 1950, published as "below Red Rock Reservoir."

REVISED RECORDS.--WSP 1309: 1935. WSP 1389: 1912, 1934. WSP 1559: Drainage area.

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 6,530 ft (1,990 m), estimated from spillway elevation based on Montana Department of Natural Resources and Conservation datum. Prior to Oct. 1, 1978, at datum 1.00 ft (0.305 m) higher. See WSP 1709 for history of nonrecording gage changes prior to May 8, 1939.

REMARKS.--Flow regulated by Lima Reservoir. No storage during 1934. Diversions for irrigation of about 10,000 acres (40.5 km^2) above reservoir.

AVERAGE DISCHARGE.--48 years (1911-18, 1925-33, 1934-35, 1936-38, 1939-69), 143 ft^3/s (4.050 m^3/s), 103,600 acre-ft/yr (128 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 2,500 ft^3/s (70.8 m^3/s) May 15, 1933, gage height, 5.40 ft (1.646 m), estimated by dam tender, released to prevent failure of dam; no flow at times.

MONTHLY AND ANNUAL MEAN DISCHARGES 1912-18, 1926-33, 1935, 1937-38, 1941-69

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	430	.00	88	96	1.09	5.2
NOVEMBER	353	.00	55	70	1.27	3.2
DECEMBER	98	.00	29	22	.79	1.7
JANUARY	58	.00	22	13	.60	1.3
FEBRUARY	55	.00	20	13	.63	1.2
MARCH	48	.00	19	12	.63	1.1
APRIL	571	5.7	104	145	1.4	6.1
MAY	948	106	358	197	.55	21
JUNE	754	186	427	121	.28	25
JULY	433	27	271	105	.39	15.9
AUGUST	321	3.6	180	100	.56	10.6
SEPTEMBER	328	.00	134	100	.75	7.8
ANNUAL	270	60	143	50	.35	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1912-18, 1927-33, 1935, 1938, 1941-69

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	11	1.5	.10	.00	.00	-----
3	11	1.8	.20	.00	.00	-----
7	11	3.5	.30	.00	.00	-----
14	14	4.8	1.0	.00	.00	-----
30	16	8.0	4.1	.00	.00	-----
60	17	9.5	5.3	.00	.00	-----
90	22	11	6.0	.00	.00	-----
120	32	14	7.0	.00	.00	-----
183	42	17	8.0	1.0	.00	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
--	--	--	--	--	--	--

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1912-18, 1926-33, 1935, 1937-38 1941-69

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	566	804	1010	1350	1670	-----
3	562	793	993	1310	1600	-----
7	557	773	948	1210	1440	-----
15	535	723	859	1040	1190	-----
30	484	638	743	880	984	-----
60	414	540	627	740	826	-----
90	368	470	535	616	675	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1912-18, 1926-33, 1935, 1937-38

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
785	522	405	334	277	196	94	42	28	22	18	9.7	3.1	.10	.00	.00	.00

06013500 BIG SHEEP CREEK BELOW MUDDY CREEK, NEAR DELL, MT

LOCATION.--Lat 44°39'19", long 112°46'41", in SW¼NW¼SE¼ sec.35, T.13 S., R.10 W., Beaverhead County, Hydrologic Unit 10020001, on left bank 2.2 mi (3.5 km) downstream from Muddy Creek, 6.5 mi (10.5 km) southwest of Dell, and 8.5 mi (13.7 km) upstream from mouth.

DRAINAGE AREA.--278 mi^2 (720 km^2).

PERIOD OF RECORD.--April to September 1936, May 1946 to September 1953. Annual maximums and daily flows for water years 1961-76 on file in Helena district office. October 1976 to September 1979. Published as Sheep Creek near Dell 1936, and Sheep Creek below Muddy Creek, near Dell 1946-53, 1960-65.

REVISED RECORDS.--WDR MT-75-1: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 6,390 ft (1,948 m), from topographic map. Apr. 21 to Sept. 30, 1936, nonrecording gage at site about 3 mi (5 km) downstream at different datum.

REMARKS.--Diversions for irrigation of about 6,600 acres (27.6 km^2) above station.

AVERAGE DISCHARGE.--26 years (1947-53, 1961-79), 65.0 ft^3/s (1.841 m^3/s), 47,090 acre-ft/yr (58.1 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 909 ft^3/s (25.7 m^3/s) Apr. 18, 1952, gage height, 7.72 ft (2.353 m), from rating curve extended above 290 ft^3/s (8.21 m^3/s); minimum observed, 26 ft^3/s (0.74 m^3/s) May 11-13, 1936, gage height, 1.90 ft (0.579 m), site and datum then in use.

MONTHLY AND ANNUAL MEAN DISCHARGES 1947-53, 1961-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	89	35	62	13	.22	8.0
NOVEMBER	77	39	57	9.3	.16	7.3
DECEMBER	63	36	48	7.2	.15	6.1
JANUARY	59	33	43	6.5	.15	5.5
FEBRUARY	60	32	42	7.2	.17	5.4
MARCH	106	33	49	18	.37	6.3
APRIL	178	38	89	35	.39	11.4
MAY	180	30	88	40	.45	11.3
JUNE	181	30	104	44	.42	13.4
JULY	153	31	73	30	.42	9.3
AUGUST	98	28	69	18	.26	8.9
SEPTEMBER	82	31	55	13	.24	7.1
ANNUAL	89	35	65	13	.20	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1948-53, 1962-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT 2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	36	31	29	27	24	-----
3	37	32	30	28	26	-----
7	38	33	31	29	27	-----
14	39	34	31	30	27	-----
30	40	34	32	30	28	-----
60	41	35	33	31	29	-----
90	42	36	34	32	30	-----
120	43	38	35	33	31	-----
183	50	42	39	35	32	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1946-79

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT 1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
225	345	521	638	787	895	1000

WEIGHTED SKEW = -0.293

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1947-53, 1961-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT 2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	262	348	387	422	440	-----
3	225	298	332	363	379	-----
7	191	250	277	301	313	-----
15	163	203	219	231	237	-----
30	136	169	183	194	199	-----
60	109	141	157	174	184	-----
90	99	127	141	156	165	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1947-53, 1961-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME 1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
215	139	105	90	80	68	61	55	50	46	42	37	34	31	30	29	27

06015400 BEAVERHEAD RIVER NEAR GRANT, MT

LOCATION.--Lat 45°00'12", long 112°51'10", in NW¼SW¼SE¼ sec.32, T.9 S., R.10 W., Beaverhead County, Hydrologic Unit 10020002, on right bank 0.4 mi (0.6 km) downstream from Clark Canyon Dam, 1.3 mi (2.1 km) upstream from Clark Canyon Creek, and 10.3 mi (16.6 km) east of Grant.

DRAINAGE AREA.--2,322 mi^2 (6,014 km^2).

PERIOD OF RECORD.--September 1962 to current year. Prior to October 1968, published as "near Armstead."

GAGE.--Water-stage recorder. Datum of gage is 5,442.78 ft (1,658.959 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Diversions for irrigation of about 76,500 acres (310 km^2) above station. Flow completely regulated by Clark Canyon Reservoir.

AVERAGE DISCHARGE.--17 years, 388 ft^3/s (10.99 m^3/s), 281,100 acre-ft/yr (347 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,110 ft^3/s (59.8 m^3/s) Feb. 7, 1963, gage height, 7.19 ft (2.192 m); no flow part of Oct. 1, 1968, when gates in dam were closed; minimum daily, 22 ft^3/s (0.62 m^3/s) Oct. 16, 1974.

MONTHLY AND ANNUAL MEAN DISCHARGES 1963-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	615	79	297	177	.59	6.4
NOVEMBER	529	53	294	167	.57	6.3
DECEMBER	497	54	261	132	.51	5.6
JANUARY	446	49	210	95	.45	4.5
FEBRUARY	364	76	223	89	.40	4.8
MARCH	441	75	218	107	.49	4.7
APRIL	903	73	290	214	.74	6.2
MAY	946	99	487	264	.54	10.5
JUNE	980	114	686	221	.32	14.8
JULY	938	345	648	164	.25	13.9
AUGUST	1230	268	639	240	.38	13.7
SEPTEMBER	1000	98	397	247	.62	8.5
ANNUAL	579	173	388	112	.29	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1964-80

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	80	51	38	30	-----	-----
3	92	58	43	34	-----	-----
7	104	64	48	37	-----	-----
14	111	67	50	40	-----	-----
30	121	76	59	48	-----	-----
60	145	91	70	56	-----	-----
90	177	106	78	59	-----	-----
120	202	118	84	62	-----	-----
183	230	137	101	77	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW= --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1963-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	989	1140	1210	1280	-----	-----
3	965	1110	1190	1270	-----	-----
7	942	1090	1170	1260	-----	-----
15	898	1060	1150	1250	-----	-----
30	833	986	1080	1180	-----	-----
60	733	868	982	1090	-----	-----
90	691	845	933	1030	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1963-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1130	917	818	723	626	489	384	306	252	214	158	9[illegible]	78	61	52	48	31

06016000 BEAVERHEAD RIVER AT BARRETTS, MT

LOCATION.--Lat 45°06'59", long 112°44'59", in SW¼SE¼ sec.19, T.8 S., R.9 W., Beaverhead County, Hydrologic Unit 10020002, on left bank 1 mi (2 km) upstream from Barretts, 2 mi (3 km) downstream from Grasshopper Creek, and 8.9 mi (14.3 km) southwest of Dillon

DRAINAGE AREA.--2,737 mi² (7,089 km²).

PERIOD OF RECORD.--August 1907 to current year. Monthly discharge only for some periods, published in WSP 1309. Prior to October 1963, published as "at Barratts".

REVISED RECORDS.--WSP 1279: 1908(M), 1910-12(M), 1929(M), 1935-36. WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 5,268.17 ft (1,605.738 m) National Geodetic Vertical Datum of 1929. Prior to Oct. 19, 1934, nonrecording gages at same site and datum.

REMARKS.--Some regulation by Lima Reservoir and nearly complete regulation by Clark Canyon Reservoir since August 1964. Diversions for irrigation of about 90,000 acres (364 km²) above station.

AVERAGE DISCHARGE.--72 years, 425 ft³/s (12.04 m³/s), 307,900 acre-ft/yr (380 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,720 ft³/s (105 m³/s) June 20, 1908, gage height, 6.1 ft (1.86 m); minimum recorded, 69 ft³/s (1.95 m³/s) Jan. 30, 1939, result of freezeup.

MONTHLY AND ANNUAL MEAN DISCHARGES 1908-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	717	116	368	165	.45	7.2
NOVEMBER	889	138	405	146	.36	8.0
DECEMBER	586	133	341	100	.29	6.7
JANUARY	513	120	287	75	.26	5.6
FEBRUARY	456	132	285	70	.24	5.6
MARCH	934	154	345	124	.36	6.8
APRIL	1350	123	482	242	.50	9.5
MAY	1910	131	617	367	.59	12.1
JUNE	2610	146	783	462	.59	15.4
JULY	1210	96	466	242	.52	9.1
AUGUST	1320	76	389	230	.59	7.6
SEPTEMBER	1070	88	330	177	.54	6.5
ANNUAL	738	168	425	138	.33	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1909-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	167	137	114	98	81	71
3	191	140	118	101	84	74
7	197	145	122	105	85	78
14	207	152	127	109	91	80
30	223	163	135	115	94	82
60	246	178	147	123	99	85
90	262	189	155	130	105	90
120	282	203	166	138	111	94
183	313	225	184	154	124	106

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1908-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1280	1840	2170	2550	2800	3040
3	1210	1730	2040	2400	2630	2850
7	1090	1570	1870	2200	2430	2650
15	976	1430	1710	2050	2280	2500
30	846	1260	1540	1880	2130	2370
60	717	1080	1300	1590	1800	2020
90	652	952	1150	1380	1550	1720

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1908-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1540	1030	794	638	548	443	386	342	307	273	233	182	150	125	112	104	88

06016000 BEAVERHEAD RIVER AT BARRETTS, MT--Continued

PERIOD OF RECORD.--1964-79.

REMARKS.--Data below based on period of record after installation of Clark Canyon Dam.

MONTHLY AND ANNUAL MEAN DISCHARGES 1964-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	715	166	397	193	.49	6.5
NOVEMBER	628	138	391	177	.45	6.4
DECEMBER	586	133	343	136	.40	5.6
JANUARY	513	127	294	96	.33	4.8
FEBRUARY	456	132	302	93	.31	4.9
MARCH	570	154	323	125	.39	5.3
APRIL	1100	178	434	242	.56	7.1
MAY	1220	311	701	286	.41	11.5
JUNE	1430	482	951	259	.27	15.6
JULY	1210	566	789	175	.22	12.9
AUGUST	1320	341	710	229	.32	11.6
SEPTEMBER	1070	151	476	257	.54	7.8
ANNUAL	713	293	510	114	.22	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
--	--	--	--	--	--	--

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1965-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	184	146	128	115	-----	-----
3	194	152	133	119	-----	-----
7	199	155	137	123	-----	-----
14	210	161	140	125	-----	-----
30	221	168	145	129	-----	-----
60	256	188	158	135	-----	-----
90	276	197	163	138	-----	-----
120	293	206	168	140	-----	-----
183	325	224	181	150	-----	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1964-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1260	1490	1610	1740	-----	-----
3	1240	1470	1590	1720	-----	-----
7	1190	1420	1550	1680	-----	-----
15	1120	1370	1510	1660	-----	-----
30	1040	1260	1380	1520	-----	-----
60	936	1120	1220	1320	-----	-----
90	878	1050	1140	1250	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1964-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1370	1150	953	861	774	606	506	419	355	310	256	191	162	142	133	128	121

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BEST DOCUMENT AVAILABLE

PERIOD OF RECORD.--1908-63.

REMARKS.--Data below based on period of record prior to regulation by Clark Canyon Dam.

MONTHLY AND ANNUAL MEAN DISCHARGES 1908-63

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	717	116	359	156	.44	7.5
NOVEMBER	889	153	409	138	.34	8.5
DECEMBER	539	140	340	88	.26	7.1
JANUARY	442	120	285	69	.24	5.9
FEBRUARY	396	150	280	61	.22	5.8
MARCH	934	169	351	124	.35	7.3
APRIL	1350	123	495	243	.49	10.3
MAY	1910	131	593	386	.65	12.3
JUNE	2610	146	735	497	.68	15.3
JULY	959	96	374	169	.45	7.8
AUGUST	603	96	297	123	.41	6.2
SEPTEMBER	591	88	288	121	.42	6.0
ANNUAL	738	168	401	135	.34	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
--	--	--	--	--	--	--

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1909-63

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	187	134	111	93	77	67
3	188	136	113	97	80	70
7	194	141	118	101	83	73
14	204	149	124	105	87	76
30	222	160	132	111	90	78
60	242	175	143	119	95	81
90	256	187	152	127	101	86
120	279	202	164	136	108	91
183	311	224	183	153	122	104

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1908-63

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1280	1920	2310	2780	3100	3400
3	1200	1790	2160	2600	2910	3200
7	1050	1590	1940	2380	2690	3000
15	917	1410	1750	2180	2500	2820
30	778	1220	1540	1980	2330	2690
60	646	1000	1270	1630	1930	2240
90	582	878	1090	1380	1600	1840

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1908-63

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1590	954	681	557	486	415	366	330	298	266	228	180	146	120	108	102	87

06017500 BLACKTAIL CREEK NEAR DILLON, MT

LOCATION.--Lat 45°02'47", long 112°32'53", in NE¼SE¼SW¼, sec.14, T.9 S., R.8 W, Beaverhead County, Hydrologic Unit 10020002, on left bank 12.5 mi (20.1 km) southeast of Dillon and 14 mi (23 km) upstream from mouth.

DRAINAGE AREA.--312 mi^2 (808 km^2).

PERIOD OF RECORD.--April 1946 to December 1953, April 1955 to September 1966. Monthly discharge for April 1946, published in WSP 1309. Prior to October 1965, published as Blacktail Creek.

GAGE.--Water-stage recorder. Datum of gage is 5,667.59 ft (1,727.481 m) National Geodetic Vertical Datum of 1929 (levels by Water and Power Resources Service).

REMARKS.--Diversions for irrigation of about 4,000 acres (16.2 km^2) above station.

AVERAGE DISCHARGE.--18 years (1946-53, 1955-66), 54.0 ft^3/s (1.529 m^3/s), 39,090 acre-ft/yr (48.2 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--1946-53, 1955-66: Maximum discharge, 426 ft^3/s (12.1 m^3/s) June 11, 1947, gage height, 3.12 ft (0.951 m); maximum gage height, 4.62 ft (1.408 m) Feb. 26, 1952 (backwater from ice); minimum discharge, 5.6 ft^3/s (0.16 m^3/s) Nov. 9, 1952.

MONTHLY AND ANNUAL MEAN DISCHARGES 1947-53, 1956-66

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	68	26	46	11	.23	7.1
NOVEMBER	53	26	42	8.4	.20	6.5
DECEMBER	52	22	33	7.6	.23	5.1
JANUARY	43	16	30	5.7	.19	4.6
FEBRUARY	51	16	33	10	.31	5.1
MARCH	63	24	43	11	.27	6.7
APRIL	78	37	55	12	.23	8.5
MAY	132	39	79	27	.34	12.1
JUNE	237	50	127	55	.43	19.6
JULY	109	34	69	24	.34	10.7
AUGUST	72	25	45	13	.29	7.1
SEPTEMBER	62	28	45	10	.23	6.9
ANNUAL	76	35	54	11	.21	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1947-53, 1956-66

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	15	11	9.7	8.6	-----	-----
3	16	12	11	9.5	-----	-----
7	18	15	13	12	-----	-----
14	22	17	15	14	-----	-----
30	25	20	18	16	-----	-----
60	29	23	20	18	-----	-----
90	31	26	23	21	-----	-----
120	33	27	24	22	-----	-----
183	37	31	28	26	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1946-66

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
132	215	341	433	536	592	653

WEIGHTED SKEW = -0.269

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1947-53, 1956-66

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	175	264	328	413	-----	-----
3	163	243	301	377	-----	-----
7	151	221	270	333	-----	-----
15	139	200	242	297	-----	-----
30	125	177	213	259	-----	-----
60	104	141	163	191	-----	-----
90	91	119	136	155	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1947-53, 1956-66

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
209	123	91	76	67	57	51	45	41	36	32	26	22	17	15	14	11

06018000 BEAVERHEAD RIVER NEAR DILLON, MT

LOCATION.--Lat 45°18'18", long 112°33'45", in NW¼NE¼NE¼ sec.22, T.6 S., R.8 W., Beaverhead County, Hydrologic Unit 10020002, on right bank just upstream from county road bridge on Anderson Lane, 7.0 mi (11.3 km) northeast of Dillon.

DRAINAGE AREA.--3,484 mi² (9,024 km²).

PERIOD OF RECORD.--October 1950 to September 1952, August 1963 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 4,960 ft (1,512 m), by barometer. Prior to August 1963, nonrecording gage on upstream side of bridge at same datum.

REMARKS.--Flow partly regulated by Lima Reservoir and Clark Canyon Reservoir since August 1964. Diversions above station for irrigation of about 133,400 acres (540 km²) of which about 5,000 acres (20.2 km²) are irrigated by imported water from Birch and Willow Creeks and of which about 17,100 acres (69.2 km²) lies below station including about 600 acres (2.43 km²) in Ruby River drainage.

AVERAGE DISCHARGE.--18 years, 380 ft³/s (10.76 m³/s), 265,300 acre-ft/yr (399 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,570 ft³/s (44.5 m³/s) June 22, 1964, gage height, 5.52 ft (1.682 m); maximum gage height, 6.35 ft (1.935 m) Dec. 19, 1964 (backwater from ice); minimum discharge observed, 8.5 ft³/s (0.24 m³/s) June 21, 1952.

MONTHLY AND ANNUAL MEAN DISCHARGES 1951-52, 1964-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	754	141	416	204	.49	9.1
NOVEMBER	808	246	515	182	.35	11.3
DECEMBER	770	236	462	149	.32	10.1
JANUARY	629	211	394	105	.27	8.6
FEBRUARY	588	230	404	103	.25	8.9
MARCH	730	233	430	129	.30	9.4
APRIL	1090	194	488	235	.48	10.7
MAY	804	105	322	205	.64	7.0
JUNE	999	94	291	217	.75	6.4
JULY	743	41	227	176	.77	5.0
AUGUST	820	72	245	182	.74	5.4
SEPTEMBER	836	79	369	236	.64	8.1
ANNUAL	612	173	380	106	.28	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1952, 1965-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	65	36	27	21	-----	-----
3	69	39	29	22	-----	-----
7	75	43	33	26	-----	-----
14	89	53	40	33	-----	-----
30	113	69	53	44	-----	-----
60	152	96	76	63	-----	-----
90	176	114	91	76	-----	-----
120	198	126	100	83	-----	-----
183	255	162	127	104	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1951-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
655	919	1260	1480	1740	1930	2110

WEIGHTED SKEW = -0.221

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1951-52, 1964-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	877	1140	1280	1420	-----	-----
3	870	1130	1240	1350	-----	-----
7	826	1070	1180	1290	-----	-----
15	758	994	1110	1230	-----	-----
30	715	914	1010	1090	-----	-----
60	629	782	852	916	-----	-----
90	571	710	778	844	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1951-52, 1964-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1050	794	682	610	554	465	405	356	298	246	185	117	82	57	45	37	27

06018500 BEAVERHEAD RIVER NEAR TWIN BRIDGES, MT

LOCATION.--Lat 45°23'01", long 112°27'07", in SW¼NW¼SE¼ sec.22, T.5 S., R.7 W., Madison County, Hydrologic Unit 10020002, on left bank at downstream side of bridge on State Highway 41, 11.5 mi (18.5 km) upstream from Ruby River, 12.7 mi (20.4 km) southwest of Twin Bridges, and 14.5 mi (23.3 km) northeast of Dillon.

DRAINAGE AREA.--3,619 mi² (9,373 km²).

PERIOD OF RECORD.--August 1935 to current year. Prior to October 1968, published as "at Blaine."

REVISED RECORDS.--WSP 1309: 1938(M), 1945(M). WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,809.15 ft (1,465.829 m), National Geodetic Vertical Datum of 1929. Prior to Feb. 17, 1949, nonrecording gage at bridge 0.5 mi (0.8 km) upstream at different datum. Feb. 17, 1949, to June 28, 1951, nonrecording gage at present site and datum.

REMARKS.--Flow partly regulated by Lima Reservoir and Clark Canyon Reservoir since August 1964. Diversions above station for irrigation of about 135,400 acres (548 km²) of which about 5,000 acres (20.2 km²) are irrigated by imported water from Birch and Willow Creeks and of which about 9,200 acres (37.2 km²) lies below station including 600 acres (2.43 km²) in Ruby River drainage.

AVERAGE DISCHARGE.--44 years, 413 ft³/s (11.70 m³/s), 299,200 acre-ft/yr (369 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 3,130 ft³/s (88.6 m³/s) June 12, 1944, gage height, 6.76 ft (2.060 m), site and datum then in use; minimum observed, 7.0 ft³/s (0.20 m³/s) May 25, 1940.

MONTHLY AND ANNUAL MEAN DISCHARGES 1936-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	880	32	444	208	.47	9.0
NOVEMBER	856	247	575	143	.25	11.6
DECEMBER	836	300	512	111	.22	10.3
JANUARY	725	173	419	104	.25	8.4
FEBRUARY	681	206	439	91	.21	8.8
MARCH	799	299	497	112	.22	10
APRIL	1250	96	507	224	.44	10.2
MAY	916	41	305	236	.77	6.1
JUNE	1410	24	397	349	.88	8.0
JULY	870	28	259	201	.77	5.2
AUGUST	894	26	216	158	.73	4.3
SEPTEMBER	922	28	394	210	.53	7.9
ANNUAL	707	170	413	121	.29	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1937-80

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	39	18	12	8.4	5.7	4.5
3	43	20	13	9.4	6.5	5.1
7	51	29	17	12	8.4	6.7
14	69	34	23	17	12	9.3
30	101	51	35	25	17	13
60	153	76	49	34	21	15
90	205	103	66	44	26	18
120	232	119	77	51	30	21
183	298	163	109	75	46	33

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1936-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
774	1080	1490	1750	2070	2300	2530

WEIGHTED SKEW = -0.192

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1936-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	997	1390	1680	2060	2360	2680
3	965	1340	1590	1920	2160	2410
7	883	1210	1440	1730	1950	2170
15	796	1070	1260	1500	1680	1870
30	710	944	1100	1320	1480	1650
60	621	799	916	1060	1170	1290
90	583	736	830	943	1020	1100

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1936-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1200	831	695	634	581	520	465	416	358	284	182	93	48	28	22	18	12

06019500 RUBY RIVER ABOVE RESERVOIR, NEAR ALDER, MT

LOCATION.--Lat 45°10'31", long 112°08'52", in SW¼SW¼ sec.31, T.7 S., R.4 W., Madison County, Hydrologic Unit 10020003, on left bank at Puller Hot Springs 0.4 mi (0.6 km) upstream from Cottonwood Creek, 6 mi (10 km) upstream from Ruby Dam, and 10.5 mi (16.9 km) south of Alder.

DRAINAGE AREA.--538 mi^2 (1,393 km^2).

PERIOD OF RECORD.--May 1938 to current year. Monthly discharge only for May 1938, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1938(M). WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 5,440.2 ft (1,658.17 m) National Geodetic Vertical Datum of 1929 (river-profile survey). Prior to Oct. 1, 1938, nonrecording gage at bridge 1,500 ft (457 m) downstream at datum 5.2 ft (1.58 m) lower. Oct. 1, 1938, to Aug. 5, 1955, water-stage recorder at site 500 ft (152 m) downstream at datum 0.5 ft (0.15 m) lower.

REMARKS.--Diversions for irrigation of about 3,000 acres (12.1 km^2) above station.

AVERAGE DISCHARGE.--41 years, 177 ft^3/s (5.013 m^3/s), 128,200 acre-ft/yr (158 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,670 ft^3/s (47.3 m^3/s) June 10, 1970, gage height, 5.62 ft (1.713 m); minimum daily, 35 ft^3/s (0.99 m^3/s) Jan. 23, 1962.

MONTHLY AND ANNUAL MEAN DISCHARGES 1939-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	161	83	120	21	.18	5.6
NOVEMBER	152	88	123	16	.13	5.8
DECEMBER	170	80	112	16	.14	5.3
JANUARY	158	70	103	16	.16	4.8
FEBRUARY	135	79	102	13	.12	4.8
MARCH	181	84	110	20	.19	5.2
APRIL	288	95	163	51	.31	7.7
MAY	727	221	410	133	.33	19.3
JUNE	1050	172	464	199	.43	21.9
JULY	482	75	188	79	.42	8.9
AUGUST	235	59	119	32	.27	5.6
SEPTEMBER	156	76	112	22	.20	5.3
ANNUAL	252	119	177	37	.21	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1940-80

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	80	65	56	49	41	36
3	82	66	58	51	43	38
7	85	70	62	55	48	43
14	89	75	67	60	53	48
30	94	80	72	66	59	54
60	98	86	79	74	68	64
90	101	90	84	80	75	71
120	104	93	88	84	79	76
183	109	97	92	87	83	80

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1939-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
720	913	1150	1310	1500	1640	1780

WEIGHTED SKEW = -0.210

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1939-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	814	1060	1220	1420	1560	1700
3	762	992	1140	1320	1450	1570
7	696	901	1030	1190	1300	1410
15	616	805	926	1080	1190	1290
30	538	701	809	947	1050	1150
60	432	560	643	747	823	898
90	354	454	517	594	650	705

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1939-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
871	523	362	261	198	148	132	119	112	105	98	89	82	74	69	61	50

06020600 RUBY RIVER BELOW RESERVOIR, NEAR ALDER, MT

LOCATION.--Lat 45°14'32", long 112°06'36", in SE¼NE¼ sec.8, T.7 S., R.4 W., Madison County, Hydrologic Unit 10020003, on right bank 0.2 mi (0.3 km) downstream from Ruby Dam and 5.7 mi (9.2 km) south of Alder.

DRAINAGE AREA.--596 mi^2 (1,544 km^2).

PERIOD OF RECORD.--November 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is 5,286.63 ft (1,611.365 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corp of Engineers).

REMARKS.--Flow regulated by Ruby River Reservoir. Diversions for irrigation of about 3,500 acres (14.2 km^2) above station.

AVERAGE DISCHARGE.--16 years (water years 1964-79), 221 ft^3/s (6.259 m^3/s), 160,100 acre-ft/yr (197 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,610 ft^3/s (45.6 m^3/s) June 10, 1970, gage height, 5.37 ft (1.637 m), minimum, 1.4 ft^3/s (0.04 m^3/s) Dec. 5, 1974, dam closure, result of discharge measurement; minimum daily, 19 ft^3/s (0.54 m^3/s) Feb. 15-19, 1967.

MONTHLY AND ANNUAL MEAN DISCHARGES 1964-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	244	83	162	45	.28	6.1
NOVEMBER	158	42	84	33	.40	3.2
DECEMBER	139	24	58	28	.49	2.2
JANUARY	127	23	53	28	.52	2.0
FEBRUARY	92	22	52	23	.44	1.9
MARCH	137	22	66	35	.53	2.5
APRIL	192	35	107	51	.47	4.0
MAY	684	210	414	153	.37	15.6
JUNE	1020	387	644	185	.29	24.3
JULY	559	266	359	76	.21	13.6
AUGUST	473	327	380	42	.11	14.3
SEPTEMBER	399	202	269	52	.19	10.2
ANNUAL	265	182	221	30	.13	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1964-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	31	24	21	19	-----	-----
3	33	26	23	21	-----	-----
7	36	28	24	21	-----	-----
14	37	29	25	22	-----	-----
30	41	31	26	23	-----	-----
60	43	32	28	24	-----	-----
90	45	33	28	24	-----	-----
120	49	35	30	26	-----	-----
183	80	64	55	49	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW- --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1964-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1050	1320	1470	1620	-----	-----
3	992	1230	1360	1490	-----	-----
7	895	1090	1200	1300	-----	-----
15	807	974	1060	1150	-----	-----
30	706	859	949	1050	-----	-----
60	565	681	752	838	-----	-----
90	498	582	632	693	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1964-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1030	667	487	424	377	295	210	143	94	64	48	36	32	26	23	21	19

06021000 RUBY RIVER NEAR ALDER, MT

LOCATION.--Lat 45°17'30", long 112°06'00", in NW¼NE¼ sec.28, T.6 S., R.4 W., Madison County Hydrologic Unit 10020003, 200 ft (61 m) upstream from county bridge, 2.5 mi (4.0 km) south of Alder, 3 mi (5 km) downstream from Ruby River Reservoir, and about 6 mi (10 km) upstream from Alder Creek.

DRAINAGE AREA.--614 mi² (1,590 km²).

PERIOD OF RECORD.--April 1929 to August 1933, April 1934 to June 1939, July 1946 to April 1961. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder at present site after July 31, 1946. Altitude of gage is 5,190 ft (1,582 m), from topographic map. Apr. 28, 1929, to Apr. 27, 1932, staff gage at site 1,200 ft (366 m) downstream at different datum. Apr. 29, 1932, to June 30, 1939, staff gage at bridge 200 ft (61 m) downstream at different datum.

REMARKS.--Diversions for irrigation of about 4,500 acres (1,820 km²) above station; bypass diversions may irrigate about 5,000 acres (2,020 km²). Flow regulated by Ruby River Reservoir since 1938.

AVERAGE DISCHARGE.--21 years (1929-32, 1934-38, 1946-60), 88.1 ft³/s (2.495 m³/s), 63,780 acre-ft/yr (78.6 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--1929-39, 1946-50: Maximum discharge, 1,380 ft³/s (40 m³/s) June 11, 1947, gage height, 5.35 ft (1.631 m), from rating curve extended about 800 ft³/s (22.7 m³/s); minimum observed, 0.3 ft³/s (0.008 m³/s) Apr. 12, 1938 (result of discharge measurements).

MONTHLY AND ANNUAL MEAN DISCHARGES 1930-32, 1935-38, 1947-60

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	174	18	56	39	.69	5.3
NOVEMBER	148	24	67	38	.56	6.3
DECEMBER	159	9.1	71	38	.53	6.7
JANUARY	141	15	57	32	.55	5.4
FEBRUARY	124	17	57	30	.53	5.4
MARCH	204	14	76	50	.66	7.1
APRIL	320	11	105	85	.81	9.9
MAY	402	47	164	98	.60	15.5
JUNE	507	39	181	145	.81	17.1
JULY	224	19	87	57	.66	8.3
AUGUST	136	13	74	40	.54	7.0
SEPTEMBER	177	17	62	44	.71	5.9
ANNUAL	205	45	88	36	.41	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1929-60

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
311	494	766	955	1200	1390	1580

WEIGHTED SKEW = -0.173

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1931-33, 1935-39, 1948-61

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	12	4.5	2.3	1.2	-----	-----
3	12	5.7	3.7	2.6	-----	-----
7	14	6.6	4.5	3.2	-----	-----
14	15	7.8	5.5	4.0	-----	-----
30	18	11	8.6	7.1	-----	-----
60	24	14	11	9.3	-----	-----
90	27	18	14	12	-----	-----
120	31	20	16	14	-----	-----
183	41	26	21	17	-----	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1930-32, 1935-38, 1947-60

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	439	670	845	1060	-----	-----
3	405	626	785	999	-----	-----
7	358	547	685	871	-----	-----
15	290	434	541	690	-----	-----
30	236	346	428	541	-----	-----
60	183	261	322	410	-----	-----
90	153	219	273	352	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1930-32, 1935-38, 1947-60

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
456	209	180	145	122	95	81	67	53	39	30	21	15	11	8.9	7.5	2.0

06023000 RUBY RIVER NEAR TWIN BRIDGES, MT

LOCATION.--Lat 45°30', long 112°20', near west line of sec.10, T.4 S., R.6 W., Madison County, Hydrologic Unit 10020003, on right bank at upstream side of county bridge, 1.2 mi (1.9 km) upstream from mouth and 2.5 mi (4.0 km) south of Twin Bridges.

DRAINAGE AREA.--935 mi² (2,421 km²).

PERIOD OF RECORD.--August to October 1940, July 1941 to June 1943, July 1946 to September 1965. Monthly discharge only July 1946, published in WSP 1309.

GAGE.--Water-stage recorder. Altitude of gage is 4,670 ft (1,423 m), by barometer. Prior to June 30, 1943, staff gage at same site at different datum.

REMARKS.--Some regulation by Ruby River Reservoir, .4 mi (39 km) above station. Diversions above station for irrigation of about 28,500 acres (115 km²), of which 500 acres (2.02 km²) lies below station. During 1965, an additional 600 acres (2.43 km²) above station was irrigated by diversion from Beaverhead River.

AVERAGE DISCHARGE.--20 years (1941-42, 1946-65), 196 ft³/s (5.551 m³/s), 141,900 acre-ft/yr (175 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Water years 1941-43, 1946-65: Maximum discharge, 1,500 ft³/s (12.5 m³/s) June 12, 1947, gage height, 6.89 ft (2.100 m); maximum gage height, 7.14 ft (2.176 m) June 22, 1964; minimum daily discharge, 1.8 ft³/s (0.051 m³/s) May 20, 21, 26, 27, 1954.

MONTHLY AND ANNUAL MEAN DISCHARGES 1942, 1947-65

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	327	89	213	57	.27	9.0
NOVEMBER	307	136	217	45	.21	9.2
DECEMBER	308	123	181	49	.27	7.7
JANUARY	266	96	141	37	.27	6.0
FEBRUARY	209	98	139	31	.22	5.9
MARCH	325	103	156	57	.37	6.6
APRIL	409	82	192	96	.50	8.1
MAY	691	23	185	149	.81	7.9
JUNE	1020	41	361	308	.85	15.3
JULY	457	80	230	110	.48	9.8
AUGUST	211	43	148	47	.33	5.9
SEPTEMBER	334	122	203	57	.28	8.6
ANNUAL	370	108	196	62	.32	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1943, 1948-65

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	39	13	6.9	3.8	-----	-----
3	41	14	7.4	4.0	-----	-----
7	54	20	10	5.4	-----	-----
14	72	29	15	7.5	-----	-----
30	82	46	31	21	-----	-----
60	102	67	52	41	-----	-----
90	118	83	68	57	-----	-----
120	133	96	78	65	-----	-----
183	157	119	101	87	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1942-65

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
410	649	1010	1260	1600	1850	2110

WEIGHTED SKEW = -0.148

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1942, 1947-65

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	641	1000	1250	1570	-----	-----
3	600	946	1190	1530	-----	-----
7	535	860	1110	1470	-----	-----
15	452	738	982	1360	-----	-----
30	384	612	811	1130	-----	-----
60	313	466	596	798	-----	-----
90	275	393	489	635	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1942, 1947-65

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
908	402	318	276	254	216	187	164	145	130	113	92	69	36	20	12	2.1

06024500 TRAIL CREEK NEAR WISDOM, MT

LOCATION.--Lat 45°39', long 113°43', in SW¼ sec.16, T.2 S., R.17 W., Beaverhead County, Hydrologic Unit 10020004, on left bank 100 ft (30 m) downstream from Runaway Creek, 4 mi (6 km) upstream from Ruby Creek, and 13 mi (21 km) west of Wisdom.

DRAINAGE AREA.--71.4 mi² (184.9 km²).

PERIOD OF RECORD.--June 1948 to October 1953, October 1966 to June 1972.

GAGE.--Water-stage recorder. Altitude of gage is 6,250 ft (1,905 m), by barometer. Prior to Oct. 20, 1966, water-stage recorder at site 100 ft (30 m) upstream at different datum.

REMARKS.--No regulation or diversion above station.

AVERAGE DISCHARGE.--8 years (1948-51, 1966-71), 85.3 ft³/s (2.416 m³/s) 61,800 acre-ft/yr (76.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,350 ft³s (38.2 m³/s), June 2, 1972, gage height, 6.64 ft (2.024 m); minimum, 1.6 ft³/s (0.045 m³/s) Nov. 9, 1969, gage height, 2.23 ft (0.680 m) result of freezeup.

MONTHLY AND ANNUAL MEAN DISCHARGES 1949-51, 1967-71

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	31	18	24	4.1	.17	2.3
NOVEMBER	41	16	23	8.3	.37	2.2
DECEMBER	21	11	16	3.4	.22	1.5
JANUARY	19	12	15	2.3	.16	1.4
FEBRUARY	28	7.9	15	6.6	.43	1.5
MARCH	25	9.8	15	5.1	.33	1.5
APRIL	196	15	84	67	.79	8.3
MAY	548	288	410	112	.27	40.2
JUNE	486	137	310	118	.38	30.4
JULY	87	43	61	17	.28	5.9
AUGUST	34	20	26	5.1	.20	2.5
SEPTEMBER	33	15	22	5.7	.26	2.1
ANNUAL	101	60	85	12	.14	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1950-51, 1968-72

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	7.3	4.8	3.7	-----	-----	-----
3	7.9	5.5	4.4	-----	-----	-----
7	8.7	6.6	5.6	-----	-----	-----
14	10	7.7	6.7	-----	-----	-----
30	11	8.6	7.5	-----	-----	-----
60	13	9.8	8.5	-----	-----	-----
90	13	11	9.9	-----	-----	-----
120	15	12	11	-----	-----	-----
183	17	15	14	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1948-72

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
666	842	1050	1160	1300	1390	1470

WEIGHTED SKEW = -0.201

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1949-51, 1967-71

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	785	861	908	-----	-----	-----
3	739	843	880	-----	-----	-----
7	678	767	800	-----	-----	-----
15	625	689	709	-----	-----	-----
30	550	605	624	-----	-----	-----
60	380	429	453	-----	-----	-----
90	284	319	335	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1949-51, 1967-71

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
730	497	275	156	85	38	27	23	20	18	15	12	11	8.4	7.2	6.2	4.3

06025500 BIG HOLE RIVER NEAR MELROSE, MT

LOCATION.--Lat 45°31'36", long 112°42'03", in SE¼SE¼SW¼ sec.34, T.3 S., R.9 W., Madison County, Hydrologic Unit 10020004, on left bank at downstream side of bridge on Interstate Highway 15 and U.S. Highway 91, 0.1 mi (0.2 km) downstream from Rock Creek, and 7 mi (11 km) south of Melrose.

DRAINAGE AREA.--2,476 mi^2 (6,413 km^2).

PERIOD OF RECORD.--October 1923 to current year. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 5,032.87 ft (1,534.018 m) National Geodetic Vertical Datum of 1929. Prior to June 14, 1927, water-stage recorder, and July 17, 1927, to Sept. 30, 1931, nonrecording gage, at site 1.7 mi (2.7 km) upstream at different datum.

REMARKS.--Diversions for irrigation of about 136,000 acres (550 km^2) above station.

AVERAGE DISCHARGE.--56 years, 1,160 ft^3/s (32.85 m^3/s), 840,400 acre-ft/yr (1.04 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,000 ft^3/s (651 m^3/s) June 14, 1927, when Wise River Reservoir dam failed (gage height, 14.0 ft or 4.27 m, from floodmark, site and datum then in use), from rating curve extended above 8,000 ft^3/s (227 m^3/s); maximum discharge unaffected by dam failure, 14,300 ft^3/s (405 m^3/s) June 10, 1972, gage height, 8.04 ft (2.451 m); minimum observed, 49 ft^3/s (1.39 m^3/s) Aug. 17, 1931, gage height, 0.70 ft (0.213 m), site and datum then in use.

MONTHLY AND ANNUAL MEAN DISCHARGES 1924-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	1110	184	511	208	.41	3.7
NOVEMBER	1040	255	507	156	.31	3.6
DECEMBER	763	223	401	125	.31	2.9
JANUARY	716	143	351	100	.28	2.5
FEBRUARY	800	143	367	110	.30	2.6
MARCH	925	247	454	159	.35	3.3
APRIL	3520	490	1540	696	.45	11
MAY	8290	1110	3460	1580	.46	24.9
JUNE	8380	1020	4100	2010	.49	29.5
JULY	4120	254	1350	796	.59	9.7
AUGUST	1460	124	484	247	.51	3.5
SEPTEMBER	870	137	381	194	.51	2.7
ANNUAL	2020	486	1160	363	.31	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1925-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	201	141	113	93	73	61
3	211	151	124	104	83	72
7	224	161	132	110	89	76
14	239	171	140	117	94	86
30	260	184	151	126	102	88
60	295	218	183	157	131	115
90	324	249	214	188	162	145
120	349	275	242	217	191	176
183	384	300	263	236	218	193

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1924-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
5180	7070	9740	11300	12900	14400	15800

WEIGHTED SKEW = -0.201

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1924-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	7160	10000	11600	13300	14400	15300
3	6890	9570	11000	12600	13600	14400
7	6290	8800	10200	11700	12700	13500
15	5540	7880	9250	10800	11800	12800
30	4870	6820	7930	9140	9920	10600
60	3870	5300	6090	6910	7430	7880
90	3150	4280	4900	5570	6018	6390

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1924-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
8030	4820	3190	2240	1520	856	603	489	420	366	316	262	218	171	137	118	88

BEST DOCUMENT AVAILABLE

06026000 BIRCH CREEK NEAR GLEN, MT

LOCATION.--Lat 45°22'46", long 112°47'48", in SE¼SE¼ sec.23, T.5 S., R.10 W., Beaverhead County, Hydrologic Unit 10020004, Beaverhead National Forest, on left bank 2.3 mi (3.7 km) downstream from Sheep Creek and 8.5 mi (13.7 km) southwest of Glen.

DRAINAGE AREA.--36.0 mi² (93.2 km²).

PERIOD OF RECORD.--May 1946 to September 1953, April 1955 to September 1976. Monthly discharge only for May 1946, published in WSP 1309. Prior to October 1950, published as "near Reichle."

GAGE.--Water-stage recorder. Concrete control since May 19, 1966. Altitude of gage is 5,862 ft (1,786 m), from plane-table survey. Prior to Nov. 16, 1949, at site 1.5 mi (2.4 km) upstream at different datum.

REMARKS.--Some regulation at lakes in headwaters. Minor diversions for irrigation above station. Recorded diversions from Willow Creek basin into Birch Creek above station are listed above.

AVERAGE DISCHARGE.--28 years, 29.4 ft³/s (0.833 m³/s), 21,300 acre-ft/yr (26.3 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 427 ft³/s (12.1 m³/s) July 5, 1975; maximum gage height recorded, 5.49 ft (1.673 m) June 27, 1967: minimum discharge, 0.8 ft³/s (0.023 m³/s) Nov. 17, 1958.

MONTHLY AND ANNUAL MEAN DISCHARGES 1947-53, 1956-76

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	31	9.2	17	5.4	.31	4.9
NOVEMBER	21	5.8	11	3.6	.31	3.2
DECEMBER	13	3.8	8.0	2.3	.28	2.3
JANUARY	12	5.2	8.0	1.8	.22	2.3
FEBRUARY	12	4.3	7.3	1.9	.25	2.1
MARCH	15	4.2	8.0	2.3	.29	2.3
APRIL	21	5.7	12	4.5	.37	3.4
MAY	130	19	56	26	.49	15.2
JUNE	190	30	117	36	.31	33.2
JULY	164	23	67	27	.41	19.1
AUGUST	58	8.3	29	11	.37	8.3
SEPTEMBER	22	6.6	13	3.8	.30	3.6
ANNUAL	39	16	29	5.9	.20	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1948-53, 1956-76

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	3.0	2.0	1.7	1.5	1.2	-----
3	3.3	2.3	1.9	1.6	1.4	-----
7	3.9	2.8	2.4	2.1	1.7	-----
14	4.6	3.5	3.0	2.6	2.3	-----
30	6.0	4.8	4.3	3.9	3.5	-----
60	6.7	5.5	5.0	4.5	4.1	-----
90	7.1	5.9	5.4	4.9	4.5	-----
120	7.4	6.1	5.5	5.0	4.5	-----
183	9.6	8.0	7.2	6.6	6.1	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1946-76

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
150	203	269	309	356	390	422

WEIGHTED SKEW = -0.236

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1947-53, 1956-76

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	184	247	286	332	364	-----
3	173	227	258	292	315	-----
7	164	213	239	266	282	-----
15	148	189	207	225	234	-----
30	129	165	181	196	205	-----
60	103	127	138	147	152	-----
90	86	103	109	115	117	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1947-53, 1956-76

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
180	121	81	61	45	23	16	13	10	8.6	7.4	6.0	4.7	3.9	3.3	2.8	1.0

06026500 JEFFERSON RIVER NEAR TWIN BRIDGES, MT

LOCATION.--Lat 45°36'50", long 112°19'45", in SE¼SW¼ sec.34, T.2 S., R.6 W., Madison County, Hydrologic Unit 10020005, on left bank 250 ft (76 m) upstream from private bridge, and 0.3 mi (0.5 km) upstream from Hell Canyon Creek, 4 mi (6 km) downstream from confluence of Beaverhead and Big Hole Rivers, and 5 mi (8 km) north of Twin Bridges.

DRAINAGE AREA.--7,632 mi^2 (19,767 km^2).

PERIOD OF RECORD.--August 1940 to September 1943, October 1957 to September 1972. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Altitude of gage is 4,560 ft (1,390 m), from topographic map. August 1940 to September 1943 wire-weight gage at site 250 ft (76 m) downstream at datum 4.46 ft (1.359 m) lower. June 4 to Sept. 30, 1972, non-recording gage at temporary site 6.5 mi (10.5 km) downstream.

REMARKS.--Diversions for irrigation of about 300,000 acres (121 km^2) above station. Some regulation by Lima Reservoir, Ruby Reservoir, and Clark Canyon Reservoir since August 1964.

AVERAGE DISCHARGE.--18 years (1940-43, 1957-72), 2,014 ft^3/s (57.04 m^3/s) 1,459,000 acre-ft/yr (1,800 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Water years 1940-43, 1957-72: Maximum discharge, 16,500 ft^3/s (467 m^3/s) June 10, 1964, gage height, 9.04 ft (2.755 m); minimum, 82 ft^3/s (2.32 m^3/s) Aug. 17.

MONTHLY AND ANNUAL MEAN DISCHARGES 1941-43, 1958-72

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	2050	760	1370	375	.27	5.7
NOVEMBER	2030	997	1530	263	.17	6.3
DECEMBER	1600	894	1290	213	.17	5.3
JANUARY	1380	649	1070	195	.18	4.4
FEBRUARY	1690	862	1160	233	.20	4.8
MARCH	2090	840	1390	314	.24	5.4
APRIL	4630	927	2410	1140	.47	10
MAY	6780	1720	3960	1460	.37	16.4
JUNE	9620	1380	6050	2370	.39	25
JULY	3690	527	2100	956	.46	8.7
AUGUST	1700	208	856	384	.45	3.5
SEPTEMBER	2110	492	1090	392	.36	4.5
ANNUAL	2650	1130	2010	469	.23	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1942-71

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
6310	8760	12000	14100	16700	18600	20500

WEIGHTED SKEW = -0.123

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1942-43, 1959-72

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	509	327	249	194	-----	-----
3	534	344	261	203	-----	-----
7	570	368	279	216	-----	-----
14	616	399	301	231	-----	-----
30	704	454	338	256	-----	-----
60	866	581	445	345	-----	-----
90	986	708	569	463	-----	-----
120	1110	832	685	570	-----	-----
183	1190	945	820	720	-----	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1941-43, 1958-72

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	8740	11800	13300	14700	-----	-----
3	8530	11400	12800	14200	-----	-----
7	8000	10700	12000	13300	-----	-----
15	7420	9910	11100	12300	-----	-----
30	6680	8780	9720	10600	-----	-----
60	5180	6790	7570	8310	-----	-----
90	4380	5670	6280	6870	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1941-43, 1958-72

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
9740	6390	4450	3300	2430	1800	1530	1340	1210	1100	983	792	632	440	294	236	178

06030500 BOULDER RIVER ABOVE ROCK CREEK, NEAR BASIN, MT

LOCATION.--Lat 46°15', long 112°30', in SW¼ sec. 20, T.6 N., R.7 W., Jefferson County, Hydrologic Unit 10020006, 0.5 mi (0.8 km) from Rock Creek, 2 mi (3 km) upstream from Thunderbolt Creek, and 12 mi (19 km) west of Basin.

DRAINAGE AREA.--19.4 mi^2 (50.2 km^2).

PERIOD OF RECORD.--April to September 1936 (published as "at CCC Camp near Bernice"), June 1946 to November 1953, April 1955 to October 1957 (no winter records after 1955). Monthly discharge only for September 1936, published in WSP 1309.

GAGE.--Water-stage recorder. Altitude of gage is 6,240 ft (2,526 m), from topographic map. Apr. 18 to Sept. 12, 1936, staff gage about 0.2 mi (0.3 km) downstream at different datum.

REMARKS.--No regulation or diversion above station.

AVERAGE DISCHARGE.--7 years (1946-53), 11.7 ft^3/s (0.331 m^3/s), 8,470 acre-ft/yr (10.4 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Water years 1936, 1946-53, 1955-57: Maximum discharge, 582 ft^3/s (16.5 m^3/s) May 19, 1948, gage height, 3.72 ft (1.134 m); minimum daily, 0.5 ft^3/s (0.014 m^3/s) Jan. 28, 29, 1951, Mar. 23, 1953.

MONTHLY AND ANNUAL MEAN DISCHARGES 1947-53

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	4.2	1.3	2.7	.98	.36	2.0
NOVEMBER	3.1	1.5	2.3	.52	.23	1.6
DECEMBER	3.0	1.0	1.9	.68	.35	1.4
JANUARY	2.5	.84	1.7	.54	.32	1.2
FEBRUARY	2.1	1.2	1.7	.36	.22	1.2
MARCH	2.8	.96	2.1	.67	.32	1.5
APRIL	43	6.1	19	12	.61	13.5
MAY	107	25	54	29	.54	38.5
JUNE	83	16	42	24	.57	30
JULY	12	4.4	7.9	2.7	.35	5.6
AUGUST	4.7	1.7	2.9	1.0	.36	2.0
SEPTEMBER	3.2	1.4	2.2	.65	.29	1.6
ANNUAL	18	6.8	12	3.7	.32	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1948-53

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.86	.54	.43	-----	-----	-----
3	.88	.57	.46	-----	-----	-----
7	.96	.64	.53	-----	-----	-----
14	1.1	.76	.63	-----	-----	-----
30	1.3	.88	.72	-----	-----	-----
60	1.4	1.1	.92	-----	-----	-----
90	1.6	1.3	1.1	-----	-----	-----
120	1.7	1.3	1.2	-----	-----	-----
183	1.9	1.5	1.3	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1947-75

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
95	125	201	252	331	405	481

WEIGHTED SKEW = 0.054

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1947-53

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	117	205	278	-----	-----	-----
3	104	181	245	-----	-----	-----
7	95	159	208	-----	-----	-----
15	84	130	159	-----	-----	-----
30	68	99	118	-----	-----	-----
60	51	69	79	-----	-----	-----
90	39	52	59	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1947-53

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
121	62	35	22	13	4.9	3.2	2.6	2.2	2.0	1.7	1.4	1.1	.88	.72	.65	.59

BEST DOCUMENT AVAILABLE

06033000 BOULDER RIVER NEAR BOULDER, MT

LOCATION.--Lat 46°12'40", long 112°05'25", in NE¼SW¼ sec.3, T.5 N., R.4 W., Jefferson County, Hydrologic Unit 10020006, on left bank at downstream side of highway bridge, 0.75 mi (1.21 km) downstream from Muskrat Creek and 2 mi (3 km) southeast of Boulder.

DRAINAGE AREA.--381 mi² (987 km²).

PERIOD OF RECORD.--April 1929 to December 1932, March 1934 to September 1972. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1279: 1931.

GAGE.--Water-stage recorder. Altitude of gage is 4,810 ft (1,466 m), by barometer. Prior to Aug. 29, 1946, chain gage at same site and datum.

REMARKS.--Diversions for irrigation of about 3,500 acres (14.2 km²) above station.

AVERAGE DISCHARGE.--41 years, 121 ft³/s (3.427 m³/s), 87,660 acre-ft/yr (108 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,490 ft³/s (98.8 m³/s) June 9, 1964, gage height, 10.90 ft (3.322 m); no flow July 13-17, 1931.

MONTHLY AND ANNUAL MEAN DISCHARGES 1930-32, 1935-72

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	113	5.9	36	21	.58	2.5
NOVEMBER	71	9.1	35	12	.35	2.4
DECEMBER	47	7.5	29	8.9	.31	2.0
JANUARY	42	10	26	8.3	.32	1.8
FEBRUARY	69	7.7	30	11	.37	2.0
MARCH	117	21	45	21	.46	3.1
APRIL	511	46	166	107	.64	11.4
MAY	961	224	493	177	.36	33.9
JUNE	1030	102	443	263	.59	30.4
JULY	374	11	98	85	.87	6.7
AUGUST	85	7.1	27	18	.67	1.9
SEPTEMBER	130	5.7	26	21	.81	1.8
ANNUAL	211	52	121	42	.35	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1931-32, 1935-72

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	11	6.8	4.2	2.7	1.5	1.0
3	12	7.0	4.5	3.5	2.0	1.5
7	13	7.4	5.5	4.2	3.0	2.4
14	14	8.3	6.3	5.0	3.7	3.0
30	15	9.5	7.3	5.9	4.5	3.8
60	18	12	8.9	7.1	5.3	4.4
90	22	14	11	8.8	6.6	5.4
120	25	17	13	10	7.8	6.4
183	27	19	15	12	9.6	8.2

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1929-75

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
699	1120	1800	2300	2950	3470	4010

WEIGHTED SKEW = 0.079

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1930-32, 1935-72

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1020	1510	1850	2280	2610	2940
3	930	1360	1650	2030	2300	2580
7	846	1220	1460	1760	1970	2180
15	738	1060	1260	1500	1670	1840
30	620	878	1040	1250	1390	1540
60	474	646	750	871	955	1030
90	369	502	580	670	731	787

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1930-32, 1935-72

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1110	585	365	240	150	65	44	36	31	27	21	15	11	7.0	5.8	4.7	1.3

06034500 JEFFERSON RIVER AT SAPPINGTON, MT

LOCATION.--Lat 45°48'15", long 111°45'05", in SE¼ sec.29, T.1 N., R.1 W., Gallatin County, Hydrologic Unit 10020005, on right bank at upstream side of bridge on State Highway 287, 1 mi (2 km) northeast of Sappington, and 5.5 mi (8.8 km) upstream from Willow Creek, and at mile 18.0 (29.0 km).

DRAINAGE AREA.--9,277 mi² (24,027 km²).

PERIOD OF RECORD.--January to December 1895, September 1896 to December 1905, August 1938 to September 1969. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1389: 1899, 1900, 1902 (M), 1904(M). WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 4,170 ft (1,271 m), from topographic map. Prior to Sept. 17, 1896, staff gage, and Sept. 17, 1896, to Dec. 31, 1905, chain gage, at railroad bridge 1.5 mi (2.4 km) upstream at different datum.

REMARKS.--Diversions for irrigation of about 364,700 acres (1,480 km²) above station. Some regulation by Lima Reservoir, Clark Canyon Reservoir (since 1964), Ruby River Reservoir, and several minor reservoirs.

AVERAGE DISCHARGE.--31 years (1896-1905, 1938-60), 2,121 ft³/s (60.07 m³/s) 1,536,000 acre-ft/yr (1.89 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 21,000 ft³/s (595 m³/s) June 23, 1899, gage height, 9.65 ft (2.941 m), site and datum then in use, from rating curve extended above 10,000 ft³/s (283 m³/s) by logarithmic plotting; maximum gage height, 11.66 ft (3.554 m) Dec. 2, 1952 (backwater from ice); minimum discharge, 84 ft³/s (2.38 m³/s) Aug. 3, 1966, gage height, 1.13 ft (0.344 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1897-98, 1900, 1902-05, 1939-69

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	2340	776	1380	462	.34	5.5
NOVEMBER	3200	1060	1660	393	.24	6.6
DECEMBER	2710	999	1430	325	.23	5.7
JANUARY	1890	545	1120	276	.23	4.7
FEBRUARY	2850	829	1290	368	.29	5.1
MARCH	2060	924	1440	257	.18	5.7
APRIL	5160	1080	2650	1000	.38	10.5
MAY	8590	1210	4600	1950	.42	18.2
JUNE	12200	1450	5790	2600	.45	23
JULY	4210	215	2050	992	.48	8.1
AUGUST	1750	166	751	379	.50	3.0
SEPTEMBER	2490	469	988	416	.42	3.9
ANNUAL	3350	1170	2100	507	.24	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1898, 1902-05, 1940-69

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	439	280	215	171	130	-----
3	452	287	220	174	131	-----
7	477	300	228	178	132	-----
14	518	322	242	187	137	-----
30	601	373	277	211	151	-----
60	759	495	373	285	204	-----
90	899	623	491	393	297	-----
120	1030	780	662	572	480	-----
183	1160	942	844	769	692	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1895-1975

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
6380	9100	12900	15400	18700	21100	23500

WEIGHTED SKEW = 0.029

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1897-98, 1900, 1902-05, 1939-69

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	8990	12100	13900	16000	17400	-----
3	8800	11800	13500	15400	16700	-----
7	8250	11100	12800	14700	16000	-----
15	7420	10200	11800	13600	14900	-----
30	6650	8980	10300	11800	12700	-----
60	5300	7020	7980	9030	9720	-----
90	4470	5840	6610	7460	8020	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1897-98, 1900, 1902-05, 1939-69

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
10500	6450	4590	3430	2600	1920	1630	1440	1290	1150	972	715	538	341	240	179	145

06035000 WILLOW CREEK NEAR HARRISON, MT

LOCATION.--Lat 45°43'21", long 111°44'17", in SW¼NW¼ sec.28, T.1 S., R.1 W., Madison County, Hydrologic Unit 10020005, on right bank 2.2 mi (3.5 km) upstream from Willow Creek Dam, 2.5 mi (4.0 km) northeast of Harrison, and 11 mi (18 km) upstream from mouth.

DRAINAGE AREA.--83.8 mi² (217.0 km²).

PERIOD OF RECORD.--April 1938 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1559: Drainage area.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 4,750 ft (1,448 m), from topographic map. Prior to Oct. 8, 1946, water-stage recorder at datum 0.22 ft (0.067 m) higher, with different concrete control.

REMARKS.--Diversions for irrigation of about 12,500 acres (50.6 km²) of which 3,500 acres (14.2 km²) is in Norwegian Creek drainage.

AVERAGE DISCHARGE.--41 years, 39.8 ft³/s (1.127 m³/s), 28,840 acre-ft/yr (35.6 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 813 ft³/s (23.0 m³/s) Feb. 3, 1963, gage height, 4.24 ft (1.292 m), from floodmarks, from rating curve extended above 300 ft³/s (8.50 m³/s); minimum, 1.4 ft³/s (0.040 m³/s) Sept. 17, 1956, gage height, 0.39 ft (0.119 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1939-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	63	3.1	30	18	.60	6.3
NOVEMBER	57	9.4	34	12	.35	7.1
DECEMBER	47	12	30	8.2	.28	6.3
JANUARY	44	10	25	6.4	.26	5.2
FEBRUARY	61	12	27	9.3	.34	5.7
MARCH	45	18	32	6.0	.19	6.7
APRIL	68	11	41	13	.32	8.6
MAY	151	12	59	34	.59	12.3
JUNE	291	10	110	64	.59	23
JULY	278	5.8	61	52	.86	12.7
AUGUST	61	2.7	12	12	.99	2.4
SEPTEMBER	62	2.0	18	16	.84	3.9
ANNUAL	76	19	40	15	.36	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1938-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
143	219	341	432	561	666	778

WEIGHTED SKEW = 0.008

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1940-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	4.6	2.9	2.3	1.9	1.6	1.4
3	4.8	3.0	2.4	2.0	1.6	1.4
7	5.1	3.1	2.5	2.0	1.7	1.5
14	5.6	3.4	2.6	2.2	1.7	1.5
30	6.6	3.9	3.0	2.4	1.9	1.6
60	9.0	4.9	3.5	2.7	2.0	1.6
90	12	6.3	4.4	3.2	2.3	1.8
120	16	9.2	6.7	5.0	3.6	2.8
183	22	14	11	9.3	7.2	6.1

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1939-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	192	295	371	476	561	651
3	177	269	334	421	488	558
7	159	241	299	374	432	491
15	137	212	264	332	383	436
30	115	181	229	296	349	404
60	86	134	170	220	260	303
90	73	110	138	175	205	237

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1939-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
234	125	77	60	51	41	35	30	25	20	14	6.8	4.6	3.3	2.8	2.5	1.9

06037500 MADISON RIVER NEAR WEST YELLOWSTONE, MT

LOCATION.--Lat 44°39'24", long 111°04'00", in SW¼ sec.36, T.13 S., R.5 E., unsurveyed, Yellowstone National Park, Hydrologic Unit 10070001, on left bank 0.3 mi (0.5 km) upstream from Riverside ranger station, 1.6 mi (2.6 km) east of West Yellowstone and west boundary of Yellowstone National Park, and 12.5 mi (20.1 km) downstream from confluence of Firehole and Gibbon Rivers, and at mile 120 (193 km).

DRAINAGE AREA.--420 mi^2 (1,088 km^2).

PERIOD OF RECORD.--June 1913 to December 1917, July 1918 to October 1921, June 1922 to September 1973. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1439: 1942. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 6,650 ft (2,030 m), from topographic map. Prior to Oct. 20, 1918, nonrecording gage, and Oct. 20, 1918, to June 29, 1930, nonrecording gage or water-stage recorder, at sites 2.5 mi (4.0 km) upstream at different datums. Supplementary nonrecording gage 0.3 mi (0.5 km) downstream at different datum used at times during 1927-30.

REMARKS.--No regulation or diversion above station.

AVERAGE DISCHARGE.--58 years (1913-17, 1918-21, 1922-73), 488 ft^3/s (13.82 m^3/s), 15.78 in/yr (401 mm/yr), 353,600 acre-ft/yr (436 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,150 ft^3/s (60.9 m^3/s) May 24, 1956, gage height, 3.44 ft (1.049 m); maximum gage height, about 10.0 ft (3.05 m) Jan. 8, 1937 (ice jam); minimum discharge, 100 ft^3/s (2.83 m^3/s), estimated, Feb. 7, 1933.

MONTHLY AND ANNUAL MEAN DISCHARGES 1914-17, 1919-21, 1923-73

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	710	297	427	85	.20	7.3
NOVEMBER	697	297	417	70	.17	7.1
DECEMBER	568	304	408	59	.14	7.0
JANUARY	582	304	397	56	.14	6.8
FEBRUARY	572	303	393	52	.13	6.7
MARCH	539	313	398	50	.12	6.8
APRIL	671	369	481	74	.15	8.2
MAY	1210	388	808	175	.22	13.8
JUNE	1420	341	803	280	.35	13.7
JULY	863	282	484	127	.26	8.3
AUGUST	600	273	418	79	.19	7.1
SEPTEMBER	593	282	414	76	.18	7.1
ANNUAL	664	337	488	78	.16	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1914-73

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1070	1280	1530	1690	1890	2050	2190

WEIGHTED SKEW = -0.144

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1915-17, 1920-21, 1924-73

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	337	297	278	263	247	237
3	344	305	287	272	256	246
7	353	315	296	281	265	254
14	362	321	301	285	267	256
30	370	328	307	290	272	260
60	379	336	314	296	276	263
90	385	341	319	301	280	267
120	390	346	323	304	284	270
183	399	352	328	309	288	274

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1914-17, 1919-21, 1923-73

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1250	1540	1710	1910	2050	2170
3	1180	1460	1620	1810	1940	2060
7	1110	1390	1560	1750	1890	2010
15	1040	1300	1460	1640	1770	1880
30	949	1180	1320	1470	1580	1680
60	812	996	1100	1220	1300	1380
90	710	862	950	1050	1120	1190

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1914-17, 1919-21, 1923-73

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1350	935	736	612	550	484	452	427	407	385	361	332	316	301	287	278	263

BEST DOCUMENT AVAILABLE

06038500 MADISON RIVER BELOW HEBGEN LAKE, NEAR GRAYLING, MT

LOCATION.--Lat 44°52'00", long 111°20'15", near northeast corner of sec.22, T.11 S., R.3 E., Gallatin County, Hydrologic Unit 10020007, Gallatin National Forest, on right bank 1,500 ft (457 m) downstream from Hebgen Dam, 8 mi (13 km) northwest of Grayling, 17 mi (27 km) upstream for West Fork, and at mile 103 (166 km).

DRAINAGE AREA.--905 mi² (2,344 km²).

PERIOD OF RECORD.--June 1909 to current year. Prior to October 1938 adjusted runoff only, published in WSP 1309. Prior to October 1949, published as "below Hebgen Reservoir".

REVISED RECORDS.--WSP 1509: 1948. WSP 1559: Drainage area. WSP 1629: 1943. WSP 1709: 1959. WSP 1729: 1943.

GAGE.--Water-stage recorder. Datum of gage is 6,448.47 ft (1,965.494 m) National Geodetic Vertical Datum of 1929 (after 1959 earthquake). Prior to July 13, 1943, nonrecording gage in stilling well.

REMARKS.--Flow completely regulated by Hebgen Lake. Diversions for irrigation of about 1,100 acres (4.45 km²) above station.

AVERAGE DISCHARGE.--70 years, 996 ft³/s (28.21 m³/s), 14.95 in/yr (380 mm/yr), 721,600 acre-ft/yr (890 hm³/yr), adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,200 ft³/s (289 m³/s) Aug. 17, 1959, caused by wave over Hebgen Dam during earthquake (gage height, 5.3 ft or 1.62 m, from floodmark), from rating curve extended above 3,500 ft³/s (99.1 m³/s) on basis of slope-area measurement of peak flow; maximum observed unaffected by wave over dam, 5,980 ft³/s (169 m³/s) June 3, 1943, gage height, 3.69 ft (1.125 m); minimum daily, 5.0 ft³/s (0.14 m³/s) May 9-12, 1960.

MONTHLY AND ANNUAL MEAN DISCHARGES 1939-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	2480	215	1400	543	.39	11.4
NOVEMBER	2540	501	1370	515	.38	11.1
DECEMBER	2840	410	990	367	.37	8.0
JANUARY	1410	180	905	226	.25	7.4
FEBRUARY	1910	181	820	269	.33	6.7
MARCH	1570	291	815	335	.41	6.6
APRIL	2340	217	906	587	.65	7.4
MAY	2060	46	681	475	.70	5.5
JUNE	2940	96	1170	694	.59	9.5
JULY	2060	503	995	292	.29	8.1
AUGUST	1720	662	1110	253	.23	9.0
SEPTEMBER	1620	368	1140	300	.26	9.3
ANNUAL	1360	506	1030	180	.18	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1940-80

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	191	73	40	23	12	7.1
3	201	77	42	24	12	7.5
7	219	84	46	27	14	8.3
14	239	95	53	31	16	10
30	324	135	76	44	22	13
60	455	268	195	148	105	83
90	641	425	329	260	195	159
120	720	525	432	361	290	248
183	893	694	596	520	440	391

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1939-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	2450	3040	3410	3860	4180	4490
3	2360	2930	3290	3740	4070	4400
7	2260	2800	3140	3560	3860	4160
15	2150	2600	2870	3180	3400	3600
30	1990	2330	2500	2680	2790	2890
60	1700	2020	2180	2360	2480	2580
90	1470	1710	1830	1970	2060	2140

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1939-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
2590	2110	1800	1580	1400	1220	1060	933	840	758	628	398	225	127	59	45	12

06040000 MADISON RIVER NEAR CAMERON, MT

LOCATION.--Lat 45°14'00", long 111°45'00", at center of south line of sec.8, T.7 S., R.1 W., Madison County, Hydrologic Unit 10020007, on right bank 30 ft (9 m) downstream from Varney Bridge, 1.8 mi (2.9 km) downstream from Wigwam Creek, and 4.1 mi (6.6 km) northwest of Cameren.

DRAINAGE AREA.--1,669 mi^2 (4,323 km^2).

PERIOD OF RECORD.--October 1951 to September 1958, August 1959 to September 1963, April 1968 to September 1970.

GAGE.--Water-stage recorder. Altitude of gage is 5,135 ft (1,565 m), from topographic map.

REMARKS.--Flow regulated by Hebgen Lake. Diversions for irrigation of about 5,300 acres (21.4 km^2) above station.

AVERAGE DISCHARGE.--13 years (1951-58, 1959-63, 1968-70), 1,432 ft^3/s (40.55 m^3/s), 1,037,000 acre-ft/yr (1,279 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,830 ft^3/s (250 m^3/s) June 11, 1970, gage height, 5.31 ft (1.618 m); maximum gage height, 8.83 ft (2.691 m) Jan. 10, 1962 (backwater from ice); minimum daily discharge, 275 ft^3/s (7.79 m^3/s) Aug. 31, 1959.

MONTHLY AND ANNUAL MEAN DISCHARGES 1953-58, 1960-63, 1969-70

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	2640	1140	1970	442	.22	11.7
NOVEMBER	3130	974	1850	586	.32	11
DECEMBER	3030	957	1280	580	.45	7.6
JANUARY	1350	859	1060	153	.14	6.3
FEBRUARY	1370	762	976	186	.19	5.8
MARCH	1640	620	923	277	.30	5.5
APRIL	1610	425	931	386	.41	5.5
MAY	3780	677	1390	833	.60	8.2
JUNE	4570	1000	2360	1010	.43	14
JULY	2020	884	1420	329	.23	8.4
AUGUST	1560	876	1280	215	.17	7.6
SEPTEMBER	1830	897	1410	224	.16	8.3
ANNUAL	1740	891	1410	234	.17	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1953-58, 1961-63, 1969-70

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	567	420	358	313	-----	-----
3	610	476	418	376	-----	-----
7	647	499	433	385	-----	-----
14	684	521	446	390	-----	-----
30	738	563	479	415	-----	-----
60	814	667	595	539	-----	-----
90	917	802	748	706	-----	-----
120	963	850	797	756	-----	-----
183	1250	1080	975	884	-----	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1953-58, 1960-63, 1969-70

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	4190	5760	6630	7580	-----	-----
3	4010	5370	6080	6820	-----	-----
7	3750	4970	5610	6260	-----	-----
15	3300	4350	4930	5540	-----	-----
30	2990	3790	4190	4580	-----	-----
60	2480	3020	3250	3440	-----	-----
90	2050	2550	2820	3090	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1953-58, 1960-63, 1969-70

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
4380	2790	2380	2020	1790	1510	1360	1220	1090	1000	904	767	670	486	443	413	367

06041000 MADISON RIVER BELOW ENNIS LAKE, NEAR MCALLISTER, MT

LOCATION.--Lat 45°29'25", long 111°38'00", in NW¼ sec.17, T.4 S., R.1 E., Madison County, Hydrologic Unit 10020007, on right bank 500 ft (152 m) downstream from Madison powerplant, 1.5 mi (2.4 km) downstream from Ennis Lake, and 5.7 mi (9.2 km) northeast of McAllister.

DRAINAGE AREA.--2,186 mi^2 (5,662 km^2).

PERIOD OF RECORD.--October 1901 to December 1905, October 1906 to current year. Prior to October 1938 adjusted monthly runoff only, published in WSP 1309. Published as "below Madison Reservoir" 1938-49. Records published as "near Red Bluff" 1890-94 and as "near Norris" 1910 are not equivalent and are published as "near Norris" in WSP 1309.

REVISED RECORDS.--WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,689.03 ft (1,429.216 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to May 7, 1941, nonrecording gage in wooden stilling well at present site at different datum. May 7, 1941, to Jan. 13, 1945, nonrecording gages in concrete stilling well at present site and datum.

REMARKS.--Flow regulated by Hebgen and Ennis Lakes. Diversions for irrigation of about 23,000 acres (93.1 km^2) above station.

AVERAGE DISCHARGE.--41 years (1938-79), 1,758 ft^3/s (49.79 m^3/s), 1,274,000 acre-ft/yr (1.57 km^3/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,550 ft^3/s (270 m^3/s) June 12, 1970, gage height, 8.01 ft (2.441 m); minimum daily, 210 ft^3/s (5.95 m^3/s) Aug. 25, 26, 1959.

MONTHLY AND ANNUAL MEAN DISCHARGES 1939-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	2960	810	1990	574	.29	9.4
NOVEMBER	3320	961	1980	574	.29	9.4
DECEMBER	3240	975	1530	353	.23	7.3
JANUARY	1770	767	1390	232	.17	6.6
FEBRUARY	2340	781	1390	283	.20	6.6
MARCH	2090	891	1440	338	.24	6.8
APRIL	3010	717	1580	620	.39	7.5
MAY	4190	859	1870	720	.38	8.9
JUNE	5180	1140	2900	1080	.37	13.7
JULY	3450	972	1830	551	.30	8.7
AUGUST	2340	1040	1560	278	.18	7.4
SEPTEMBER	2300	934	1640	341	.21	7.8
ANNUAL	2420	1050	1760	302	.17	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1940-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	888	681	543	427	308	240
3	943	733	596	481	360	288
7	978	780	670	580	483	422
14	1020	819	713	629	539	482
30	1080	876	778	702	621	570
60	1210	1020	915	835	748	693
90	1320	1120	1010	917	818	753
120	1370	1170	1060	972	872	806
183	1550	1320	1190	1090	977	904

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1939-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	4440	5850	6760	7890	8720	9530
3	4250	5600	6470	7550	8340	9120
7	3970	5170	5930	6860	7530	8190
15	3630	4650	5270	6000	6510	7000
30	3260	4090	4560	5090	5430	5750
60	2750	3370	3710	4070	4300	4500
90	2430	2950	3250	3590	3820	4040

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1939-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
4670	3240	2740	2440	2210	1880	1680	1560	1480	1350	1210	1030	921	800	742	683	527

06042000 MADISON RIVER BELOW CHERRY CREEK, NEAR NORRIS, MT

LOCATION.--Lat 45°38'58", long 111°31'20", in SE¼ sec.19, T.2 S., R.2 E., Madison County, Hydrologic Unit 10020007, 2 mi (3 km) downstream from Cherry Creek, 7 mi (11 km) northeast of Red Bluff, and 10 mi (16 km) northeast of Norris.

DRAINAGE AREA.--2,387 mi^2 (6,182 km^2)

PERIOD OF RECORD.--October 1896 to November 1905. Published as "near Red Bluff", 1897-1902.

GAGE.--Nonrecording gage. Altitude of gage is 4,400 ft (1,340 m), from topographic map.

REMARKS.--Some diversion for irrigation above station. Flow regulated by Ennis Lake since 1900.

EXTREMES FOR PERIOD OF RECORD.--Water years, 1897-1905: Maximum discharge observed, 10,275 ft^3/s (291 m^3/s) June 16, 1899, gage height, 3.90 ft (1.189 m); minimum not determined.

MONTHLY AND ANNUAL MEAN DISCHARGES 1897-1905

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	2160	1210	1520	310	.20	6.3
NOVEMBER	1800	1220	1450	221	.15	6.0
DECEMBER	1700	1140	1400	233	.17	5.8
JANUARY	1500	1110	1270	143	.11	5.3
FEBRUARY	1500	1000	1240	182	.15	5.1
MARCH	1400	860	1210	208	.17	5.0
APRIL	2100	1400	1660	245	.15	6.9
MAY	5790	1570	3730	1330	.36	15.5
JUNE	8380	3200	4890	1630	.33	20.3
JULY	4440	1840	2620	877	.33	10.9
AUGUST	2500	1180	1650	419	.25	6.8
SEPTEMBER	2020	1100	1480	281	.19	6.1
ANNUAL	2670	1520	2010	357	.18	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1898-1905

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	962	861	828	-----	-----	-----
3	980	875	838	-----	-----	-----
7	1070	938	877	-----	-----	-----
14	1090	943	876	-----	-----	-----
30	1090	948	879	-----	-----	-----
60	1120	994	936	-----	-----	-----
90	1160	1060	1020	-----	-----	-----
120	1210	1130	1100	-----	-----	-----
183	1290	1200	1170	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1898-1905

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
--	--	--	--	--	--	--

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1897-1905

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	6940	8950	10200	-----	-----	-----
3	6820	8610	9600	-----	-----	-----
7	6410	8120	9160	-----	-----	-----
15	6110	7770	8800	-----	-----	-----
30	5370	6830	7720	-----	-----	-----
60	4340	5420	6040	-----	-----	-----
90	3600	4450	4940	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1897-1905

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
8290	5230	3550	2780	2180	1770	1590	1460	1380	1310	1250	1160	1090	918	889	874	862

06042500 MADISON RIVER NEAR THREE FORKS, MT

LOCATION.---Lat 45°49'25", long 111°29'50", in SW¼NE¼ sec.20, T.1 N., R.2 E., Gallatin County, Hydrologic Unit 10020007, 5 mi (8 km) south of Three Forks and 8 mi (13 km) upstream from confluence with Jefferson and Gallatin Rivers.

DRAINAGE AREA.--2,511 mi^2 (6,503 km^2).

PERIOD OF RECORD.--September 1893 to April 1897, October 1928 to September 1932, October 1941 to September 1950. Monthly discharge only for some periods, published in WSP 1309. Published as "at Three Forks" prior to Oct. 1, 1928.

REVISED RECORDS.--WSP 1309: 1896, drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 4,160 ft (1,268 m), from topographic map. Aug. 24, 1893, to May 1, 1897, slope gage, and Nov. 8, 1928, to Sept. 30, 1932, wire-weight gage at different datums at site 6 mi (10 km) downstream.

REMARKS.--Diversions for irrigation of about 31,000 acres (125 km^2) above station. Flow regulated by Hebgen Lake since 1915 and Ennis Lake since 1900.

AVERAGE DISCHARGE.--16 years (1893-96, 1928-32, 1941-50), 1,650 ft^3/s (46.73 m^3/s), 1,195,000 acre-ft/yr (1470 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 8,175 ft^3/s (232 m^3/s) June 19, 1896, from rating curve extended above 3,300 ft^3/s (93.5 m^3/s); maximum gage height, 10.48 ft (3.194 m) Feb. 8, 1948 (ice jam); minimum discharge observed, 416 ft^3/s (11.8 m^3/s) Feb. 27. 1930.

MONTHLY AND ANNUAL MEAN DISCHARGES 1894-96, 1929-32, 1942-50

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	1900	826	1350	305	.23	6.8
NOVEMBER	1580	884	1340	186	.14	6.8
DECEMBER	1760	1000	1470	219	.15	7.4
JANUARY	2100	1100	1470	259	.18	7.5
FEBRUARY	2500	898	1460	459	.31	7.4
MARCH	2000	834	1430	361	.25	7.2
APRIL	3100	779	1680	642	.38	8.5
MAY	3510	972	1920	707	.37	9.7
JUNE	5950	887	3030	1430	.47	15.3
JULY	2730	783	1730	503	.29	8.7
AUGUST	3030	884	1460	480	.33	7.4
SEPTEMBER	2740	547	1440	453	.31	7.3
ANNUAL	2030	1040	1650	281	.17	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1894-1950

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
3060	4420	6420	7830	9700	11200	12700

WEIGHTED SKEW = 0.073

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1895-97, 1930-32, 1943-50

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	799	587	498	433	-----	-----
3	830	616	524	456	-----	-----
7	919	694	591	513	-----	-----
14	971	750	648	571	-----	-----
30	1060	817	699	607	-----	-----
60	1170	942	822	725	-----	-----
90	1280	1060	937	830	-----	-----
120	1350	1140	997	873	-----	-----
183	1420	1210	1070	942	-----	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1894-96, 1929-32, 1942-50

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	4490	6350	7570	9100	-----	-----
3	4290	6090	7290	8810	-----	-----
7	3990	5680	6820	8280	-----	-----
15	3680	5160	6130	7370	-----	-----
30	3250	4470	5280	6300	-----	-----
60	2740	3570	4100	4730	-----	-----
90	2430	3030	3380	3790	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1894-96, 1929-32, 1942-50

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
5420	3180	2550	2180	1940	1650	1560	1490	1420	1310	1160	982	826	721	657	574	485

BEST DOCUMENT AVAILABLE

06043000 TAYLOR CREEK NEAR GRAYLING, MT

LOCATION.--Lat 45°04'15", long 111°12'15", in NW¼NW¼ sec.11, T.9 S., R.4 E., Gallatin County, Hydrologic Unit 10020008, on right bank 0.5 mi (0.8 km) upstream from mouth and 17 mi (27 km) north of Grayling.

DRAINAGE AREA.--98.0 mi² (253.8 km²).

PERIOD OF RECORD.--June 1946 to November 1953, April 1955 to September 1957, August 1966 to September 1967.

GAGE.--Water-stage recorder. Altitude of gage is 6,600 ft (2,012 m), by barometer.

REMARKS.--One diversion for irrigation of about 10 acres (0.04 km²) above station. Natural storage at lakes in headwaters.

AVERAGE DISCHARGE.--10 years (1946-53, 1955-57, 1966-67), 97.9 ft³/s (2.773 m³/s), 70,880 acre-ft/yr (87.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,020 ft³/s (28.9 m³/s) June 6, 1952, gage height, 4.32 ft (1.317 m); minimum recorded, 7.4 ft³/s (0.21 m³/s) Oct. 29, 1956.

MONTHLY AND ANNUAL MEAN DISCHARGES 1947-53, 1956-57, 1967

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	57	23	34	9.9	.30	2.9
NOVEMBER	35	15	25	6.0	.24	2.1
DECEMBER	24	15	20	3.3	.16	1.7
JANUARY	22	16	19	2.4	.13	1.6
FEBRUARY	21	12	17	2.5	.15	1.5
MARCH	22	12	17	2.8	.16	1.5
APRIL	57	14	37	13	.36	3.1
MAY	400	101	257	103	.40	21.9
JUNE	598	297	432	86	.20	36.9
JULY	310	113	202	65	.32	17.2
AUGUST	99	43	72	21	.29	6.1
SEPTEMBER	59	32	42	8.8	.21	3.6
ANNUAL	126	78	98	17	.17	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1948-53, 1956-57

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	13	11	11	-----	-----	-----
3	13	12	11	-----	-----	-----
7	13	12	11	-----	-----	-----
14	15	13	12	-----	-----	-----
30	16	13	12	-----	-----	-----
60	17	15	14	-----	-----	-----
90	18	16	15	-----	-----	-----
120	18	17	16	-----	-----	-----
183	22	19	18	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1947-67

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
649	761	929	1060	1240	1390	1530

WEIGHTED SKEW = -0.073

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1947-53, 1956-57, 1967

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	717	838	896	-----	-----	-----
3	667	782	839	-----	-----	-----
7	617	726	782	-----	-----	-----
15	550	660	721	-----	-----	-----
30	469	560	617	-----	-----	-----
60	374	438	477	-----	-----	-----
90	296	349	383	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1947-53, 1956-57, 1967

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
691	449	317	217	134	64	42	31	25	21	19	16	15	12	12	11	11

06043500 GALLATIN RIVER NEAR GALLATIN GATEWAY, MT

LOCATION.--Lat 45°29'51", long 111°16'09", in SE¼SE¼SE¼ sec.7, T.4 S., R.4 E., Gallatin County, Hydrologic Unit 10020008, on left bank 0.3 mi (0.5 km) downstream from Spanish Creek, 7.3 mi (11.7 km) south of Gallatin Gateway, and at mile 42.5 (68.4 km).

DRAINAGE AREA.--825 mi^3 (2,137 km^2).

PERIOD OF RECORD.--August 1889 to September 1894, June 1930 to September 1969, annual maximum, water years 1970-71, October 1971 to current year. Monthly discharge only for some periods, published in WSP 1309. Published as West Gallatin River near Bozeman 1889-94.

REVISED RECORDS.--WSP 1389: 1892(M), 1893-94. WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 5,167.7 ft (1,575.11 m) National Geodetic Vertical Datum of 1929. Prior to Oct. 20, 1932, nonrecording gages at several different sites and datums within 0.8 mi (1.3 km) of present site.

REMARKS.--Diversions for irrigation of about 1,400 acres (5.67 km^2) above station.

AVERAGE DISCHARGE.--52 years, 815 ft^3/s (23.08 m^3/s), 590,500 acre-ft/yr (728 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,690 ft^3/s (274 m^3/s) June 17, 1974, gage height, 7.38 ft (2.249 m); minimum, 117 ft^3/s (3.31 m^3/s) Jan. 19, 1935, gage height, 0.68 ft (0.207 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1890-94, 1931-69, 1972-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	743	238	460	118	.26	4.7
NOVEMBER	589	247	386	85	.22	4.0
DECEMBER	549	214	326	69	.21	3.3
JANUARY	468	200	308	59	.19	3.2
FEBRUARY	430	220	307	54	.18	3.1
MARCH	465	206	310	59	.19	3.2
APRIL	856	263	479	142	.30	4.9
MAY	3140	873	1730	564	.33	17.8
JUNE	5060	643	3000	966	.32	30.8
JULY	3670	345	1340	601	.45	13.7
AUGUST	998	269	614	170	.28	6.3
SEPTEMBER	788	233	498	123	.25	5.1
ANNUAL	1180	408	814	179	.22	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1891-94, 1932-69, 1973-80

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	234	199	184	174	163	156
3	243	208	193	182	170	164
7	257	220	204	192	179	172
14	269	234	218	206	193	186
30	282	245	229	217	204	197
60	290	253	236	223	211	203
90	295	256	240	227	214	207
120	301	260	243	230	218	210
183	338	288	265	249	232	222

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1890-1978

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
3770	5290	7000	8000	9200	9990	10900

WEIGHTED SKEW = 0.024

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1890-94, 1931-69, 1972-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	4670	6060	6860	7760	8360	8910
3	4400	5750	6530	7430	8040	8610
7	4090	5320	6020	6810	7340	7830
15	3700	4780	5380	6030	6450	6820
30	3250	4100	4530	4970	5230	5460
60	2570	3200	3520	3850	4050	4220
90	2050	2540	2790	3050	3210	3350

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1890-94, 1931-69, 1972-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
4830	3050	2070	1430	984	637	504	433	384	339	302	266	242	223	212	204	183

06044000 GALLATIN RIVER NEAR SALESVILLE, MT

LOCATION.--Lat 45°32', long 111°14' on the north line of sec.33, T.3 S., R.4 E., Gallatin County, Hydrologic Unit 10020008, at county road bridge, 4 mi (6 km) south of Salesville (now called Gallatin Gateway), and 4 mi (6 km) downstream from Spanish Creek.

DRAINAGE AREA.--833 mi² (2,157 km²).

PERIOD OF RECORD.--August 1895 to September 1905, August 1910 to September 1913, April 1921 to September 1923 (no winter record some years). Published as West Gallatin River near Salesville, 1895-1905, 1910-13.

GAGE.--Wire-weight gage. Altitude of gage is 5,050 ft (1,539 m), from topographic map. Prior to Sept. 13, 1896, staff gage just upstream from bridge at same datum.

REMARKS.--Diversions for irrigation of about 16,000 acres (64.8 km²) above station.

AVERAGE DISCHARGE.--13 years (1895-1905, 1911-13, 1922-23), 958 ft³/s (27.1 m³/s).

EXTREMES FOR PERIOD OF RECORD.--Water years, 1895-1905, 1910-13, 1921-23: Maximum discharge observed, 10,000 ft³/s (2,832 m³/s) June 20, 1899, gage height, 8.55 ft (2.606 m); minimum not determined.

MONTHLY AND ANNUAL MEAN DISCHARGES 1896-1905, 1912-13, 1923

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	653	378	505	70	.14	4.4
NOVEMBER	590	350	437	56	.13	3.8
DECEMBER	547	300	396	73	.18	3.4
JANUARY	600	250	375	82	.22	3.3
FEBRUARY	500	250	358	70	.20	3.1
MARCH	500	250	351	71	.20	3.1
APRIL	968	376	539	172	.32	4.7
MAY	3840	690	2040	1050	.51	17.8
JUNE	5330	2160	3730	1060	.28	32.5
JULY	3750	796	1560	787	.50	13.6
AUGUST	981	400	672	165	.25	5.8
SEPTEMBER	897	375	528	126	.24	4.6
ANNUAL	1250	611	959	175	.18	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1896-1923

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
5100	6270	7710	8600	9680	10400	11200

WEIGHTED SKEW = 0.039

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1897-1905, 1913

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	299	272	263	257	-----	-----
3	308	280	269	261	-----	-----
7	319	284	269	258	-----	-----
14	335	288	269	255	-----	-----
30	341	293	273	258	-----	-----
60	357	306	283	265	-----	-----
90	360	313	294	281	-----	-----
120	372	323	302	287	-----	-----
183	404	370	357	349	-----	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1896-1905, 1912-13. 1923

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	6390	7950	8660	9320	-----	-----
3	6020	7430	8090	8700	-----	-----
7	5520	6740	7310	7830	-----	-----
15	5080	6080	6520	6900	-----	-----
30	4370	5220	5580	5900	-----	-----
60	3280	3870	4110	4300	-----	-----
90	2570	3010	3190	3330	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1896-1905, 1912-13, 1923

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
6000	3950	2440	1550	1080	670	539	479	441	394	364	328	295	269	260	255	251

06048000 EAST GALLATIN RIVER AT BOZEMAN, MT

LOCATION.--Lat 45°42'00", long 111°01'45", near center of south line of sec.31, T.1 S., R.6 E., Gallatin County, Hydrologic Unit 10020008, on left bank 100 ft (30 m) upstream from highway bridge, 500 ft (152 m) downstream from Bozeman Creek, 0.5 mi (0.8 km) upstream from Bridger Creek, and 0.5 mi (0.8 km) north of Bozeman.

DRAINAGE AREA.--148 mi^2 (383 km^2).

PERIOD OF RECORD.--August 1939 to September 1961.

REVISED RECORDS.--WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,701.6 ft (1,433.05 m) National Geodetic Vertical Datum of 1929, unadjusted.

REMARKS.--Diversions for irrigation of about 4,000 acres (16.2 km^2) above station. Some diurnal fluctuation caused by mill above station.

AVERAGE DISCHARGE.--22 years, 84.7 ft^3/s (2.399 m^3/s) 61,290 acre-ft/yr (75.6 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,240 ft^3/s (35.1 m^3/s) June 4, 1953, gage height, 6.09 ft (1.856 m), from high-water mark in well; minimum, 12 ft^3/s (0.34 m^3/s) Dec. 9, 1944, Mar. 24-26, 1955.

MONTHLY AND ANNUAL MEAN DISCHARGES 1940-61

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	86	30	52	12	.22	5.2
NOVEMBER	75	31	50	11	.21	5.0
DECEMBER	75	28	45	10	.23	4.5
JANUARY	64	23	39	8.4	.22	3.8
FEBRUARY	56	28	42	7.8	.18	4.2
MARCH	124	26	60	20	.34	5.9
APRIL	329	68	158	77	.49	15.5
MAY	529	90	236	108	.46	23.3
JUNE	343	46	178	83	.47	17.5
JULY	134	23	63	24	.39	6.2
AUGUST	96	19	42	17	.40	4.1
SEPTEMBER	83	34	49	11	.23	4.9
ANNUAL	156	50	85	24	.29	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1940-61

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
361	533	808	1010	1310	1560	1830

WEIGHTED SKEW = 0.113

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1941-61

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	23	18	15	13	-----	-----
3	24	18	16	14	-----	-----
7	26	21	19	17	-----	-----
14	29	25	22	21	-----	-----
30	33	28	26	24	-----	-----
60	36	32	30	28	-----	-----
90	40	35	33	31	-----	-----
120	42	37	35	33	-----	-----
183	45	39	36	34	-----	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1940-61

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	441	674	845	1080	-----	-----
3	392	593	742	949	-----	-----
7	342	502	619	780	-----	-----
15	304	426	510	617	-----	-----
30	261	357	418	493	-----	-----
60	217	300	356	426	-----	-----
90	185	252	297	352	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1940-61

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
470	273	195	142	104	69	58	52	47	42	38	32	28	24	21	19	15

06048500 BRIDGER CREEK NEAR BOZEMAN, MT

LOCATION.--Lat 45°42'20", long 110°57'40", in NE¼SE¼ sec.34, T.1 S., R.6 E., Gallatin County, Hydrologic Unit 10020008, on right bank 3.6 mi (5.8 km) upstream from mouth and 3.5 mi (5.6 km) northeast of Bozeman.

DRAINAGE AREA.--62.5 mi² (161.9 km²).

PERIOD OF RECORD.--October 1945 to September 1969, April 1971 to June 1972. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1948. WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 4,960 ft (1,510 m), from topographic map . Prior to June 28, 1946, nonrecording gage at same site and datum.

REMARKS.--Diversions for irrigation of about 1,200 acres (4.86 km²) above station.

AVERAGE DISCHARGE.--24 years (1945-69), 36.6 ft³/s (1.036 m³/s), 7.95 in/yr (202 mm/yr), 26,520 acre-ft/yr (32.7 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 902 ft³/s (25.5 m³/s) June 3, 1953, gage height, 4.90 ft (1.494 m), from reconstructed gage-height graph, from rating curve extended above 380 ft³/s (10.8 m³/s); minimum, 0.9 ft³/s (0.025 m³/s) Mar. 23, 1953, Aug. 30, 1954.

MONTHLY AND ANNUAL MEAN DISCHARGES 1946-69

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	22	6.1	11	4.4	.41	2.5
NOVEMBER	22	5.8	10	3.9	.38	2.4
DECEMBER	17	4.1	8.8	4.0	.46	2.0
JANUARY	15	3.0	7.3	3.4	.47	1.7
FEBRUARY	34	2.9	9.0	6.5	.72	2.0
MARCH	45	2.8	14	10	.71	3.3
APRIL	148	20	66	36	.55	15
MAY	301	54	152	63	.41	34.7
JUNE	240	32	103	57	.55	23.5
JULY	84	11	32	17	.53	7.3
AUGUST	39	3.9	14	7.6	.56	3.1
SEPTEMBER	29	5.2	11	6.0	.55	2.5
ANNUAL	70	17	37	14	.38	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1947-69

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	3.5	2.2	1.7	1.4	-----	-----
3	3.9	2.5	2.0	1.6	-----	-----
7	4.5	3.0	2.3	1.9	-----	-----
14	5.0	3.5	2.8	2.4	-----	-----
30	5.6	4.1	3.4	3.0	-----	-----
60	6.2	4.5	3.9	3.4	-----	-----
90	6.8	5.0	4.3	3.8	-----	-----
120	7.5	5.5	4.6	4.1	-----	-----
183	8.1	6.1	5.3	4.8	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1946-72

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
183	285	453	581	767	923	1100

WEIGHTED SKEW = 0.122

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1946-69

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	260	408	518	668	-----	-----
3	244	378	475	607	-----	-----
7	223	334	411	512	-----	-----
15	193	279	336	409	-----	-----
30	163	230	272	325	-----	-----
60	129	181	214	255	-----	-----
90	105	145	169	199	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1946-69

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
294	161	107	74	51	26	16	12	9.9	8.1	6.7	5.4	4.5	3.6	2.9	2.4	1.8

06050000 HYALITE CREEK AT HYALITE RANGER STATION, NEAR BOZEMAN, MT

LOCATION.--Lat 45°33'42", long 111°04'12", in NW¼SE¼ sec.23, T.3 S., R.5 E., Gallatin County, Hydrologic Unit 10020008, Gallatin National Forest, on right bank 0.8 mi (1.3 km) south of Hyalite ranger station, 7.3 mi (11.7 km) south of Bozeman, and 20 mi (32 km) upstream from mouth.

DRAINAGE AREA.--48.2 mi^2 (124.8 km^2)

PERIOD OF RECORD.--August 1895 to October 1896, calendar year 1897 (discharge measurements only), April 1898 to October 1899, June to October 1900, May to September 1902, calendar year 1903 (discharge measurements only), September to December 1904, September 1934 to current year. Monthly discharge only for some periods, published in WSP 1309. Prior to 1934, published as Middle Creek near Bozeman.

REVISED RECORDS.--WSP 84: 1898-99. WSP 1509: 1902, 1939(M). WSP 1559: Drainage area. WSP 1709: 1953, 1956-57.

GAGE.--Water-stage recorder. Datum of gage is 5,539.6 ft (1,688.47 m) National Geodetic Vertical Datum of 1929. Prior to September 1934, nonrecording gages at two sites 0.5 mi (0.8 km) upstream at different datums. Sept. 13, 1934, to May 13, 1948, water-stage recorder at site 0.3 mi (0.5 km) downstream at different datum.

REMARKS.--Flow regulated by Middle Creek Reservoir since March 1951.

AVERAGE DISCHARGE.--47 years (1895-96, 1898-99, 1934-79), 67.2 ft^3/s (1.903 m^3/s), 18.93 in/yr (481 mm/yr), 48,700 acre-ft/yr (60.0 hm^3/yr), adjusted for storage in Middle Creek Reservoir.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 956 ft^3/s (27.1 m^3/s) June 14, 1898, gage height, 2.10 ft (0.640 m), site and datum then in use; maximum gage height, 4.01 ft (1.222 m) Dec. 15-18, 1940 (backwater from ice), site and datum then in use; minimum daily discharge, 5.0 ft^3/s (0.14 m^3/s) Jan. 27, 1961.

MONTHLY AND ANNUAL MEAN DISCHARGES 1896, 1899, 1935-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	80	19	39	14	.36	4.8
NOVEMBER	65	12	28	11	.40	3.5
DECEMBER	60	7.7	21	8.6	.40	2.7
JANUARY	50	6.3	18	7.1	.40	2.2
FEBRUARY	55	8.6	18	7.1	.40	2.2
MARCH	75	8.5	18	9.6	.52	2.3
APRIL	123	13	39	22	.55	4.9
MAY	290	65	138	48	.34	17.2
JUNE	504	89	225	72	.32	28
JULY	334	31	135	58	.42	16.9
AUGUST	133	25	76	30	.40	9.5
SEPTEMBER	117	21	47	18	.39	5.8
ANNUAL	135	37	67	18	.27	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1899, 1936-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	10	7.6	6.5	5.8	5.1	4.7
3	11	7.9	6.8	6.0	5.2	4.8
7	11	8.6	7.5	6.8	6.0	5.6
14	12	9.4	8.3	7.6	6.9	6.6
30	14	10	9.3	8.5	7.8	7.3
60	15	11	10	9.2	8.3	7.8
90	16	12	11	10	9.6	9.2
120	17	13	12	11	10	10
183	22	18	16	15	14	13

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1898-1978

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
260	358	505	602	736	842	955

WEIGHTED SKEW = 0.073

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1896, 1899, 1935-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	341	458	539	648	734	822
3	320	429	505	605	684	767
7	289	383	449	538	609	682
15	257	342	401	481	543	609
30	227	296	345	410	461	514
60	193	249	287	337	376	416
90	164	208	237	274	302	330

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1896, 1899, 1935-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
362	236	170	135	109	69	46	34	27	22	18	14	12	9.3	8.4	7.5	5.8

06052500 GALLATIN RIVER AT LOGAN, MT

LOCATION.--Lat 45°53'07", long 111°26'15", in NE¼ sec.35, T.2 N., R.2 E., Gallatin County, Hydrologic Unit 10020008, on right bank at former county road bridge site, 0.5 mi (0.8 km) west of Logan and 6 mi (10 km) upstream from mouth.

DRAINAGE AREA.--1,795 mi² (4,649 km²).

PERIOD OF RECORD.--September 1893 to December 1905, August 1928 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1389: 1898-99, 1903, 1905, 1929(M), 1935-36(M), 1938-39(M), 1941(M). WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,086.42 ft (1,245.541 m) National Geodetic Vertical Datum of 1929. Prior to Aug. 10, 1928, nonrecording gages at several sites within 0.5 mi (0.8 km) of present site at various datums. Aug. 10, 1928, to Oct. 7, 1941, nonrecording gage at present site and datum.

REMARKS.--Some regulation by Middle Creek Reservoir. Diversions for irrigation of about 110,000 acres (445 km²) above station.

AVERAGE DISCHARGE.--63 years, 1,057 ft³/s (29.93 m³/s), 765,800 acre-ft/yr (944 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 9,840 ft³/s (279 m³/s) June 21, 1899, gage height, 6.25 ft (1.905 m), site and datum then in use; maximum gage height, 11.88 ft (3.621 m) Feb. 5, 1963, from floodmark (backwater from ice); minimum discharge observed, 130 ft³/s (3.68 m³/s) July 19, 1939, gage height, 2.04 ft (0.622 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1894, 1896-1905, 1929-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	1220	333	764	224	.29	6.0
NOVEMBER	1190	328	816	187	.23	6.4
DECEMBER	1050	450	752	136	.18	5.9
JANUARY	971	400	684	127	.19	5.4
FEBRUARY	1250	385	703	149	.21	5.5
MARCH	1290	478	794	154	.19	6.3
APRIL	1990	429	1040	317	.30	8.2
MAY	4690	176	2080	922	.44	16.4
JUNE	5680	280	2970	1360	.46	23.4
JULY	3900	162	971	656	.68	7.7
AUGUST	1020	167	473	189	.40	3.7
SEPTEMBER	1270	238	647	230	.35	5.1
ANNUAL	1650	454	1060	285	.27	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1895-1978

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
3590	4880	6630	7810	9300	10400	11500

WEIGHTED SKEW = 0.098

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1895, 1897-1905, 1930-80

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	327	236	197	169	141	124
3	332	242	204	176	149	133
7	345	252	213	184	156	139
14	364	264	221	190	159	140
30	398	285	236	201	166	146
60	474	334	273	228	184	158
90	543	392	322	269	216	185
120	605	448	370	311	250	214
183	676	520	439	375	308	267

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1894, 1896-1905, 1929-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	5000	6620	7340	7980	8320	8570
3	4700	6270	7010	7680	8050	8340
7	4300	5800	6530	7240	7640	7960
15	3830	5270	6020	6800	7270	7670
30	3270	4560	5280	6030	6510	6920
60	2580	3550	4090	4680	5070	5410
90	2090	2830	3250	3730	4050	4330

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1894, 1896-1905, 1929-1979

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
5390	3270	2080	1480	1180	946	841	759	691	625	545	416	333	237	196	176	154

06054500 MISSOURI RIVER AT TOSTON, MT

LOCATION.--Lat 46°08'46", long 111°25'18", in SE¼NW¼ sec.36, T.5 N., R.2 E., Broadwater County, Hydrologic Unit 10030101, on left bank 2.2 mi (3.5 km) southeast of Toston, 4.8 mi (7.7 km) upstream from Crow Creek, 7.8 mi (12.6 km) downstream from Sixteenmile Creek, and at mile 2,296.1 (3,694.4 km).

DRAINAGE AREA.--14,669 mi^2 (37,993 km^2).

PERIOD OF RECORD.--April 1890 to February 1891, April 1910 to December 1916, April 1941 to current year. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 3,905.68 ft (1,190.451 m) National Geodetic Vertical Datum of 1929. Prior to Dec. 20, 1916, nonrecording gages at site 2.5 mi (4.0 km) downstream at different datums.

REMARKS.--Some regulation by six reservoirs on tributaries and Clark Canyon Reservoir. Diversions for irrigation of about 555,400 acres (2,250 km^2) of which 12,000 acres (48.6 km^2) lies below station.

AVERAGE DISCHARGE.--44 years, 5,363 ft^3/s (151.9 m^3/s), 3,885,000 acre-ft/yr (4.79 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,000 ft^3/s (906 m^3/s) June 6, 1948, gage height, 11.77 ft (3.587 m); minimum, 562 ft^3/s (15.9 m^3/s) Apr. 30, 1941, gage height, 1.68 ft (0.512 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1911-16, 1942-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	6780	2880	4510	887	.20	7.0
NOVEMBER	6550	3470	4770	782	.16	7.4
DECEMBER	5970	2700	3820	637	.17	5.9
JANUARY	4610	2430	3360	525	.16	5.2
FEBRUARY	5220	2650	3780	551	.15	5.9
MARCH	6900	2840	4170	815	.20	6.5
APRIL	10100	2390	5870	1830	.31	9.1
MAY	18400	3130	9110	3400	.37	14.1
JUNE	21800	4000	13200	4940	.37	20.4
JULY	14200	1390	5470	2530	.46	8.5
AUGUST	5730	1070	2840	1080	.38	4.4
SEPTEMBER	5340	2030	3540	855	.24	5.5
ANNUAL	7510	2930	5360	1040	.19	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1890-1978

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
13900	18600	24600	28300	32600	35600	38400

WEIGHTED SKEW = -0.233

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1912-16, 1943-80

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	1700	1250	1040	883	727	634
3	1820	1350	1130	962	795	695
7	2030	1530	1290	1100	914	800
14	2210	1660	1390	1190	978	850
30	2460	1850	1550	1310	1070	928
60	2790	2150	1830	1580	1320	1160
90	3110	2510	2200	1950	1680	1510
120	3420	2890	2610	2390	2150	1990
183	3640	3180	2960	2800	2620	2510

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1911-16, 1942-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	18700	24400	27400	30700	32700	34500
3	18300	23900	26900	30100	32100	33800
7	17400	22800	25800	28900	30900	32600
15	15900	21100	24000	27000	28900	30600
30	14100	18700	21300	24000	25800	27500
60	11600	14900	16700	18500	19700	20700
90	9900	12600	13900	15400	16300	17000

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1911-16, 1942-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
21500	14200	9810	7690	6400	5230	4630	4200	3840	3520	3150	2570	2100	1700	1450	1210	901

06055500 CROW CREEK NEAR RADERSBURG, MT

LOCATION.--Lat 46°16'05", long 111°41'30", in SE¼ sec.14, T.6 N., R.1 W., Broadwater County, Hydrologic Unit 10030101, Helena National Forest, on left bank 1.5 mi (2.4 km) upstream from Slim Sam Creek, and 6 mi (10 km) northwest of Radersburg.

DRAINAGE AREA.--76.6 mi² (198.4 km²). Area at site used Apr. 17, 1924, to Sept. 30, 1929, 78.0 mi² (202.0 km²). Area at site used prior to Apr. 17, 1924, 86.4 mi² (223.8 km²).

PERIOD OF RECORD.--April to June 1901, May 1919 to September 1929, June 1966 to June 1972. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1509: 1920, 1921, 1922(M), 1924(M). WRD MT 1966: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 4,870 ft (1,484 m), from topographic map. Prior to June 29, 1901, nonrecording gage at site 1.5 mi (2.4 km) downstream at different datum. May 25, 1919, to Apr. 16, 1924, nonrecording gage at about same site as earlier record but different datum. Apr. 17, 1924, to Sept. 30, 1929, at site 0.6 mi (1.0 km) downstream at different datum.

REMARKS.--No regulation or diversion above gage.

AVERAGE DISCHARGE.--15 years (1919-29, 1966-71), 47.7 ft³/s (1.351 m³/s), 34,560 acre-ft/yr (42.6 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 1,000 ft³/s (28.3 m³/s) July 14, 1920, gage height, 5 ft (1.5 m), site and datum then in use; minimum observed, 1.4 ft³/s (0.040 m³/s) Jan. 10, 1922, gage height, 0.19 ft (0.058 m), site and datum then in use.

MONTHLY AND ANNUAL MEAN DISCHARGES 1920-29, 1967-71

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	24	7.0	17	5.4	.32	3.0
NOVEMBER	25	7.0	14	5.0	.36	2.4
DECEMBER	17	5.0	9.8	2.9	.29	1.7
JANUARY	17	4.0	8.4	3.1	.36	1.5
FEBRUARY	14	3.0	8.4	3.1	.37	1.5
MARCH	17	6.0	11	3.4	.31	1.9
APRIL	96	9.6	34	22	.66	5.9
MAY	263	108	169	42	.25	29.5
JUNE	377	67	195	94	.48	34.1
JULY	142	33	62	26	.43	10.8
AUGUST	38	15	25	6.9	.28	4.3
SEPTEMBER	27	14	20	4.2	.21	3.5
ANNUAL	68	34	48	9.0	.19	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1921-29, 1968-72

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	4.9	3.3	2.6	2.2	-----	-----
3	5.3	3.6	2.9	2.4	-----	-----
7	5.7	3.8	3.0	2.5	-----	-----
14	6.1	4.1	3.2	2.6	-----	-----
30	6.6	4.6	3.8	3.3	-----	-----
60	7.3	5.5	4.8	4.3	-----	-----
90	8.1	6.3	5.4	4.8	-----	-----
120	9.1	7.0	6.1	5.4	-----	-----
183	12	9.2	7.9	6.9	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1901-75

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
340	445	577	667	810	966	1110

WEIGHTED SKEW = 0.140

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1920-29, 1967-71

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	427	520	578	647	-----	-----
3	386	475	531	599	-----	-----
7	345	431	488	562	-----	-----
15	292	373	429	505	-----	-----
30	244	313	362	428	-----	-----
60	179	224	258	306	-----	-----
90	138	171	196	230	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1920-29, 1967-71

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
414	226	137	91	58	29	22	18	14	11	8.6	7.0	6.0	3.9	3.5	3.2	2.3

BEST DOCUMENT AVAILABLE

06057000 MISSOURI RIVER NEAR TOWNSEND, MT

LOCATION.--Lat 46°20'10", long 111°31'55", in SW¼NW¼ sec.30, T.7 N., R.2 E., Broadwater County, Hydrologic Unit 10030101, at highway bridge, 1 mi (2 km) northwest of Townsend.

DRAINAGE AREA.--15,343 mi^3 (39,738 km^2).

PERIOD OF RECORD.--October 1892 to May 1904. Prior to 1901, published as "at Townsend" or "Townsend Station on Missouri River."

REVISED RECORDS.--WSP 1309: 1899 (M), 1900-01, drainage area.

GAGE.--Nonrecording gage. Datum of gage is 3,785.0 ft (1,153.67 m) National Geodetic Vertical Datum of 1929 (Missouri River Commission datum). A correction of +16.0 ft (4.88 m) is necessary to convert to datum of 1929.

REMARKS.--Diversions above station for irrigation. Flow partly regulated by Ennis Lake beginning in 1900.

AVERAGE DISCHARGE.--12 years (1891-1903), 5,215 ft^3/s (147.7 m^3/s), 3,780,000 acre-ft/yr (4,660 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 38,400 ft^3/s (1,087 m^3/s) June 3-5, 1894, elevation, 3,795.7 ft, from rating curve extended above 25,000 ft^3/s (708 m^3/s); minimum not determined.

MONTHLY AND ANNUAL MEAN DISCHARGES 1892-1903

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	3930	2280	3150	573	.18	5.0
NOVEMBER	4070	2400	3090	536	.17	4.9
DECEMBER	3800	1950	2600	517	.20	4.1
JANUARY	3000	1500	2150	498	.23	3.4
FEBRUARY	3000	1700	2270	419	.18	3.6
MARCH	4500	2000	3100	674	.22	4.9
APRIL	7970	2520	5080	1600	.31	8.0
MAY	19900	7500	11700	3820	.33	16.4
JUNE	27000	9090	17500	6730	.38	27.6
JULY	14100	2350	7340	3720	.51	11.6
AUGUST	4070	1520	2800	992	.35	4.4
SEPTEMBER	4230	1780	2680	694	.26	4.2
ANNUAL	7600	4180	5290	963	.18	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1893-1904

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	1890	1530	1370	1260	-----	-----
3	1880	1560	1430	1330	-----	-----
7	1880	1570	1440	1340	-----	-----
14	1900	1570	1440	1340	-----	-----
30	1930	1600	1460	1370	-----	-----
60	2100	1800	1670	1570	-----	-----
90	2270	1980	1850	1750	-----	-----
120	2450	2170	2050	1960	-----	-----
183	2610	2330	2200	2110	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1892-1964

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
19900	25200	32400	37100	43100	47500	51900

WEIGHTED SKEW = 0.165

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1892-1903

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	25800	33200	37700	-----	-----	-----
3	25500	32700	37100	-----	-----	-----
7	24100	31100	35400	-----	-----	-----
15	22100	28900	33200	-----	-----	-----
30	19100	24600	28200	-----	-----	-----
60	14800	18700	21400	-----	-----	-----
90	11900	14900	17000	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1892-1903

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
29900	18100	12500	8920	6480	4260	3540	3000	2800	2560	2270	2050	1890	1580	1530	1500	1330

BEST DOCUMENT AVAILABLE

06061500 PRICKLY PEAR CREEK NEAR CLANCY, MT

LOCATION.--Lat 46°31'05", long 111°56'45", in NE¼SW¼ sec.23, T.9 N., R.3 W., Jefferson County, Hydrologic Unit 10030101, on right bank 3.5 mi (5.6 km) downstream from Lump Gulch Creek, 4 mi (6 km) northeast of Clancy, and 7 mi (11 km) southeast of Helena.

DRAINAGE AREA.--192 mi² (497 km²).

PERIOD OF RECORD.--July 1908 to September 1916, July 1921 to September 1933, October 1945 to October 1953, October 1954 to September 1969, October 1978 to September 1979. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1086: 1946(m). WSP 1309: 1925, 1927, 1931(M), 1933, 1948(M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,067.1 ft (1,239.65 m) National Geodetic Vertical Datum of 1929. Prior to July 12, 1910, nonrecording gage at site 1.2 mi (1.9 m) upstream at different datum. July 12, 1910, to Sept. 30, 1916, and July 28, 1921, to Aug. 12, 1933, nonrecording gage at site 2.2 mi (3.5 km) upstream at different datum.

REMARKS.--Diversions for irrigation of about 700 acres (2.83 km) above station.

AVERAGE DISCHARGE.--44 years (water years, 1909-16, 1922-33, 1946-53, 1955-69, 1979), 48.3 ft³/s (1.368 m³/s) 34,990 acre-ft/yr (43.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 900 ft³/s (25.5 m³/s) about June 9, 1927 (estimated on basis of hydrographic comparison); minimum, 0.5 ft³/s (0.014 m³/s) Jan. 26, 1958, gage height, 0.40 ft (0.122 m), backwater from ice.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 1,200 ft³/s (34.0 m³/s) June 19, 1975, gage height, 6.56 ft (2.000 m).

MONTHLY AND ANNUAL MEAN DISCHARGES
1909-16, 1922-33, 1946-53, 1955-69,
1979

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	70	13	32	14	.44	5.5
NOVEMBER	60	15	30	11	.37	5.2
DECEMBER	40	12	24	7.1	.29	4.2
JANUARY	30	9.9	21	5.3	.25	3.7
FEBRUARY	57	12	24	8.1	.34	4.1
MARCH	80	17	32	13	.42	5.5
APRIL	131	23	54	21	.40	9.3
MAY	194	38	110	37	.33	19
JUNE	450	27	138	85	.62	23.8
JULY	141	10	57	33	.58	9.8
AUGUST	76	6.3	29	15	.51	5.1
SEPTEMBER	71	9.3	29	15	.53	5.0
ANNUAL	85	19	48	16	.32	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1911-75

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
165	274	453	596	781	905	1040

WEIGHTED SKEW = 0.230

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1910-16, 1923-33,
1947-53, 1956-69

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	13	9.2	7.5	6.3	5.2	4.5
3	14	9.7	7.9	6.7	5.5	4.8
7	15	11	8.7	7.3	5.9	5.2
14	16	11	9.5	8.0	6.5	5.6
30	17	13	11	8.9	7.2	6.2
60	20	15	12	9.9	7.9	6.7
90	21	16	14	12	10	8.8
120	23	17	15	13	11	10
183	24	18	16	14	12	11

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1909-16, 1922-33,
1946-53, 1955-69, 1979

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	233	360	446	556	638	720
3	211	321	396	492	569	636
7	188	283	350	438	506	575
15	169	253	311	387	445	504
30	148	218	265	324	368	412
60	122	174	205	242	268	292
90	103	142	166	192	210	226

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1909-16, 1922-33, 1946-53, 1955-69, 1979

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
262	150	105	78	64	46	37	31	27	23	20	17	14	11	9.6	7.9	5.6

BEST DOCUMENT AVAILABLE

06062500 TENMILE CREEK NEAR RIMINI, MT

LOCATION.--Lat 46°31'27", long 112°15'22", in NW¼SW¼NE¼ sec.20, T.9 N., R.5 W., Lewis and Clark County, Hydrologic Unit 10030101, Helena National Forest, on left bank at U.S. Forest Service Moose Creek picnic grounds, 500 ft (152 m) upstream from Moose Creek and 2.5 mi (4.0 km) north of Rimini.

DRAINAGE AREA.--32.7 mi^2 (84.7 km^2).

PERIOD OF RECORD.--October 1914 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1917, 1921, 1924-25. WSP 1509: 1915, 1916-17(M), 1920(M), 1927(M), 1928-30, 1947(M), 1948, 1950(M). WSP 1559: Drainage area. WSP 1709: 1959.

GAGE.--Water-stage recorder and concrete control since Oct. 20, 1937. Altitude of gage is 4,850 ft (1,478 m), from topographic map. Prior to Dec. 17, 1934, water-stage recorder at site 40 ft (12 m) downstream at different datum and different control.

REMARKS.--Flow regulated by Chessman and Scott Reservoirs on tributaries above station, combined capacity, 2,340 acre-ft (2.89 hm^3). Small diversions above station for water supply for city of Helena.

AVERAGE DISCHARGE.--65 years, 17.6 ft^3/s (0.498 m^3/s), 12,750 acre-ft/yr (15.7 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 995 ft^3/s (28.2 m^3/s) June 19, 1975, gage height, 4.89 ft (1.490 m); maximum gage height, 4.98 ft (1.518 m), May 27, 1917, site and datum then in use; no flow at times.

MONTHLY AND ANNUAL MEAN DISCHARGES 1915-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	23	.19	2.8	4.0	1.44	1.3
NOVEMBER	9.6	.22	2.1	2.2	1.02	1.0
DECEMBER	9.7	.17	1.7	1.8	1.03	.80
JANUARY	7.0	.14	1.5	1.3	.87	.70
FEBRUARY	5.1	.10	1.4	1.1	.82	.60
MARCH	15	.17	2.4	2.3	.97	1.1
APRIL	67	1.5	17	14	.83	8.2
MAY	300	16	86	45	.52	40.9
JUNE	346	6.6	79	68	.86	37.6
JULY	66	.54	12	14	1.18	5.7
AUGUST	12	.16	2.2	2.3	1.04	1.0
SEPTEMBER	18	.23	1.9	2.8	1.44	.90
ANNUAL	53	3.6	18	9.6	.55	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1916-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.35	.13	.05	.00	.00	.00
3	.38	.15	.08	.03	.00	.00
7	.43	.17	.08	.04	.01	.00
14	.46	.20	.13	.09	.06	.04
30	.57	.26	.18	.13	.09	.08
60	.70	.36	.26	.21	.16	.13
90	.83	.43	.31	.24	.18	.15
120	.94	.47	.34	.26	.19	.16
183	1.1	.55	.39	.29	.22	.18

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1915-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
126	217	352	444	567	671	773

WEIGHTED SKEW = -0.308

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1915-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	185	301	375	465	529	589
3	174	276	340	414	465	512
7	155	244	299	363	405	444
15	131	208	255	311	348	383
30	108	172	214	263	298	331
60	77	123	153	190	216	241
90	58	91	112	138	156	173

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1915-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
223	104	54	30	17	5.8	3.2	1.9	1.3	.94	.67	.44	.32	.22	.17	.12	.00

06063000 TENMILE CREEK NEAR HELENA, MT

LOCATION.--Lat 46°36'20", long 112°05'20", near center of SE¼ sec.22, T.10 N., R.4 W., Lewis and Clark County, Hydrologic Unit 10030101, on right bank at Broadwater Hotel, 1.5 mi (2.4 km) west of Helena and 2.5 mi (4.0 km) upstream from Sevenmile Creek.

DRAINAGE AREA.--102 mi² (264 km²).

PERIOD OF RECORD.--July 1908 to September 1954.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 3,960 ft (1,207 m), from topographic map. Prior to Sept. 18, 1925, nonrecording gage and Sept. 18, 1925, to Mar. 15, 1929, water-stage recorder, at site 100 ft (30 m) downstream at different datum.

REMARKS.--Diversions for irrigation of about 1,200 acres (4.86 km²) above station and for water supply of Helena.

AVERAGE DISCHARGE.--46 years (1908-54), 27.2 ft³/s (0.770 m³/s), 19,690 acre-ft/yr (24.3 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 995 ft³/s (28.2 m³/s) May 28, 1917, computed from graph based on gage readings; maximum gage height, 6.58 ft (2.001 m) June 11, 1927, site and datum then in use; no flow at times.

MONTHLY AND ANNUAL MEAN DISCHARGES 1909-54

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	40	.62	8.4	8.3	.99	2.6
NOVEMBER	26	.99	8.3	6.1	.73	2.5
DECEMBER	19	.75	6.3	4.6	.73	1.9
JANUARY	19	.85	5.5	3.9	.71	1.7
FEBRUARY	14	1.6	5.3	3.0	.57	1.6
MARCH	31	1.8	9.8	6.9	.70	3.0
APRIL	111	5.2	36	24	.67	11.1
MAY	381	23	115	78	.68	35.4
JUNE	423	3.7	106	99	.93	32.6
JULY	117	.00	18	23	1.23	5.6
AUGUST	20	.00	3.2	4.8	1.5	1.0
SEPTEMBER	20	.00	3.2	4.2	1.32	1.0
ANNUAL	74	4.4	27	17	.62	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1910-54

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.40	.10	.05	.00	.00	.00
3	.45	.11	.05	.00	.00	.00
7	.50	.15	.05	.00	.00	.00
14	.60	.15	.05	.00	.00	.00
30	.80	.28	.10	.00	.00	.00
60	1.3	.40	.15	.05	.00	.00
90	2.2	.70	.30	.10	.02	.00
120	2.9	1.3	.77	.50	.30	.00
183	4.0	2.0	1.4	1.0	.73	.00

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1909-75

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
132	263	497	684	945	1160	1380

WEIGHTED SKEW = -0.176

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1909-54

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	230	420	560	747	891	1040
3	212	391	524	700	835	971
7	187	346	464	620	740	860
15	159	291	390	523	626	731
30	130	241	327	446	541	640
60	98	175	233	310	370	431
90	75	134	176	231	272	314

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1909-54

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
326	141	72	44	29	15	9.7	6.4	4.5	3.2	1.9	.79	.43	.10	.10	.10	.10

BEST DOCUMENT AVAILABLE

06065500 MISSOURI RIVER BELOW HAUSER LAKE DAM, NEAR HELENA, MT

LOCATION.--Lat 46°46', long 111°53', in SW¼ sec.29, T.12 N., R.2 W., Lewis and Clark County, Hydrologic Unit 10030101, 0.25 mi (0.40 km) downstream from Hauser Lake powerplant, 1.5 mi (2.4 km) upstream from Beaver Creek, and 15 mi (24 km) northeast of Helena.

DRAINAGE AREA.--16,876 mi² (43,709 km²).

PERIOD OF RECORD.--October 1923 to September 1942.

REVISED RECORDS.--WSP 1309: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,581 ft (1,091.5 m) National Geodetic Vertical Datum of 1929. Prior to Feb. 1, 1940, water-stage recorder at site 0.25 mi (0.40 km) upstream at datum of 3,500 ft (1,067 m) National Geodetic Vertical Datum of 1929 (levels by Montana Power Co.; add 16 ft (4.9 m) to obtain datum of 1929).

REMARKS.--Many diversions for irrigation above station and flow partly regulated by reservoirs and powerplants above station.

COOPERATION.--All gage-height records, numerous discharge measurements, and entire computed record for calendar year 1924 and water years 1927-40 furnished by the Montana Power Co.

AVERAGE DISCHARGE.--20 years (1923-42), 4,115 ft³/s (116.5 m³/s), 2,980 acre-ft/yr (3,670 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 33,300 ft³/s (943 m³/s) June 15, 18, 1927, gage height, 78.80 ft (24.018 m), site and datum then in use; minimum daily, 280 ft³/s (7.93 m³/s) Mar. 3, 1938, gage height, 65.35 ft (19.919 m), site and datum then in use.

MONTHLY AND ANNUAL MEAN DISCHARGES 1924-42

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	5540	1940	3300	938	.28	6.8
NOVEMBER	5940	2000	3400	1010	.30	7.0
DECEMBER	4730	1940	3210	802	.25	6.6
JANUARY	4340	1900	3020	689	.23	6.2
FEBRUARY	5150	1670	3200	960	.30	6.6
MARCH	7280	2400	3910	1100	.28	8.0
APRIL	9230	2590	5060	1930	.38	10.4
MAY	16300	2380	7030	3530	.50	14.4
JUNE	23500	2550	7760	5200	.67	15.9
JULY	7640	1210	3500	1780	.51	7.2
AUGUST	3710	971	2500	816	.33	5.1
SEPTEMBER	4620	1500	2850	954	.33	5.8
ANNUAL	6410	2380	4060	1240	.30	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1924-42

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	732	499	403	337	-----	-----
3	1290	878	705	583	-----	-----
7	1660	1190	994	856	-----	-----
14	1860	1340	1110	941	-----	-----
30	2120	1540	1270	1070	-----	-----
60	2350	1750	1480	1280	-----	-----
90	2510	1910	1640	1440	-----	-----
120	2670	2060	1800	1600	-----	-----
183	2890	2290	2010	1810	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
--	--	--	--	--	--	--

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1924-42

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	12500	18900	23300	29000	-----	-----
3	12100	18400	22900	28900	-----	-----
7	11200	17200	21600	27400	-----	-----
15	9860	15200	19100	24300	-----	-----
30	8590	13100	16500	21200	-----	-----
60	7230	10700	13100	16400	-----	-----
90	6290	9070	11100	13800	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1924-42

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
16900	9570	6830	5540	4880	4240	3830	3390	3030	2680	2270	1790	1450	1040	848	704	506

BEST DOCUMENT AVAILABLE

06066500 MISSOURI RIVER BELOW HOLTER DAM, NEAR WOLF CREEK, MT

LOCATION.--Lat 46°59'41", long 112°00'37", in NE¼SW¼SE¼ sec.5, T.14 N., R.3 W., Lewis and Clark County, Hydrologic Unit 10030102, on left bank 0.4 mi (0.6 km) downstream from Holter Dam, 2.8 mi (4.5 km) southeast of Wolf Creek, and at mile 2,211.13 (3,557.71 km).

DRAINAGE AREA.--17,149 mi² (44,416 km²).

PERIOD OF RECORD.--October 1945 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,464.11 ft (1,055.861 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Flow regulated by nine smaller irrigation reservoirs and powerplants, Clark Canyon Reservoir, and Canyon Ferry Reservoir. Diversions for irrigation of about 594,400 acres (2,410 km²).

AVERAGE DISCHARGE.--34 years, 5,579 ft³/s (158.0 m³/s), 4,042,000 acre-ft/yr (4.98 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,800 ft³/s (986 m³/s) June 8, 1948, gage height, 11.70 ft (3.566 m); minimum, probably less than 250 ft³/s (7.08 m³/s) during powerplant shutdown July 26, 1968; minimum daily, 747 ft³/s (21.2 m³/s) May 27, 1962.

MONTHLY AND ANNUAL MEAN DISCHARGES 1946-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	10100	2710	4670	1290	.28	7.0
NOVEMBER	8500	3250	5000	1150	.23	7.5
DECEMBER	9650	3700	5180	1110	.21	7.7
JANUARY	6430	3560	5080	882	.17	7.6
FEBRUARY	6770	3560	4990	937	.19	7.4
MARCH	9190	2760	5170	1330	.26	7.7
APRIL	11100	2490	5940	2190	.37	8.9
MAY	15700	2060	7480	4030	.54	11.2
JUNE	23400	1530	9270	4750	.51	13.8
JULY	16600	2450	5870	2800	.48	8.8
AUGUST	6830	1970	4160	1170	.28	6.2
SEPTEMBER	6360	2080	4170	1090	.26	6.2
ANNUAL	8290	3130	5580	1270	.23	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1947-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	2180	1380	1060	845	642	-----
3	2540	1620	1220	953	701	-----
7	2840	1900	1480	1180	888	-----
14	3010	2060	1620	1310	1000	-----
30	3250	2340	1920	1600	1280	-----
60	3560	2680	2270	1950	1620	-----
90	3860	3020	2620	2310	1990	-----
120	4090	3240	2820	2490	2150	-----
183	4380	3550	3140	2830	2500	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
--	--	--	--	--	--	--

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1946-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	14400	20500	24200	28600	31600	-----
3	13900	20000	23700	28000	30900	-----
7	13260	18900	22300	26300	29100	-----
15	12200	17500	20800	24700	27400	-----
30	10700	15100	17800	21200	23600	-----
60	9120	12500	14600	17200	19000	-----
90	8070	10800	12600	14700	16300	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1946-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
17900	11700	8680	7220	6580	5900	5270	4840	4490	4160	3790	3110	2600	2060	1610	1080	927

06068500 LITTLE PRICKLY PEAR CREEK NEAR MARYSVILLE, MT

LOCATION.--Lat 46°47', long 112°24', in SW¼ sec.18, T.12 N., R.6 W., Lewis and Clark County, Hydrologic Unit 10030102, 0.5 mi (0.8 km) downstream from Deadman Creek and 6 mi (10 km) northwest of Marysville.

DRAINAGE AREA.--44.4 mi² (115.0 km²).

PERIOD OF RECORD.--April 1913 to December 1932.

REVISED RECORDS.--WSP: 1309; 1923-29, drainage area.

GAGE.--Nonrecording gage. Altitude of gage is 4,700 ft (1,433 m), from topographic map. Apr. 12 to May 23, 1913, at site just downstream from mouth of Deadman Creek at different datum.

REMARKS.--Some diversions for irrigation above station.

AVERAGE DISCHARGE.--19 years (1913-32), 25.7 ft³/s (0.728 m³/s), 18,620 acre-ft/yr (23.0 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 454 ft³/s (12.9 m³/s) May 25, 26, 1917, gage height, 3.8 ft (1.16 m); minimum observed, 2 ft³/s (0.057 m³/s) Mar. 1-11, 1914, gage height, 0.9 ft (0.27 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1914-32

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	18	7.2	14	3.8	.28	4.4
NOVEMBER	17	4.6	12	3.3	.29	3.8
DECEMBER	14	5.4	9.5	2.3	.24	3.1
JANUARY	11	5.0	7.9	1.9	.24	2.6
FEBRUARY	10	3.5	6.1	1.8	.30	2.0
MARCH	24	3.3	9.5	5.5	.59	3.1
APRIL	64	5.0	29	18	.60	9.5
MAY	190	23	84	42	.50	27.2
JUNE	245	17	74	59	.79	24.1
JULY	67	8.7	30	15	.50	9.8
AUGUST	26	7.2	18	6.2	.34	5.9
SEPTEMBER	20	7.3	14	4.1	.29	4.5
ANNUAL	51	8.8	26	10	.40	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1913-32

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
82	146	259	349	476	582	698

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1914-32

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	4.9	3.4	2.8	2.3	-----	-----
3	5.0	3.5	2.8	2.3	-----	-----
7	5.0	3.5	2.8	2.3	-----	-----
14	5.2	3.7	3.1	2.6	-----	-----
30	5.6	4.2	3.6	3.1	-----	-----
60	6.2	4.8	4.1	3.7	-----	-----
90	6.8	5.4	4.8	4.4	-----	-----
120	7.6	6.1	5.5	5.0	-----	-----
183	9.4	7.5	6.6	5.9	-----	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1914-32

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	156	243	288	332	-----	-----
3	151	232	274	313	-----	-----
7	138	212	251	289	-----	-----
15	117	182	218	257	-----	-----
30	96	154	190	234	-----	-----
60	74	118	147	183	-----	-----
90	61	95	115	140	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1914-32

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
194	99	59	41	31	21	17	14	12	9.1	7.4	5.6	4.8	4.0	3.1	2.8	2.2

06071000 LITTLE PRICKLY PEAR CREEK NEAR CANYON CREEK, MT

LOCATION.--Lat 46°49', long 112°15', in NW¼ sec.9, T.12 N., R.5 W., Lewis and Clark County, Hydrologic Unit 10030102, 0.5 mi (0.8 km) downstream from Canyon Creek and 1 mi (2 km) northeast of Canyon Creek post office.

DRAINAGE AREA.--183 mi² (474 km²).

PERIOD OF RECORD.--April 1909 to December 1911, April 1913 to December 1924.

REVISED RECORDS.--WSP 1309: 1920(M), drainage area.

GAGE.--Nonrecording gage. Altitude of gage is 4,240 ft (1,292), from topographic map. Prior to June 2, 1917, at site 0.2 mi (0.3 km) downstream at different datum.

REMARKS.--Flow is greatly affected by diversions for irrigation above station.

AVERAGE DISCHARGE.--13 years (1909-11, 1913-24), 48.2 ft³/s (1.365 m³/s), 34,920 acre-ft/yr (43.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 665 ft³/s (18.8 m³/s) May 29, 1913, gage height, 4.8 ft (1.45 m); no flow at times in 1910 and 1911.

MONTHLY AND ANNUAL MEAN DISCHARGES 1910-11, 1914-24

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	44	4.9	24	9.6	.40	4.1
NOVEMBER	40	10	26	8.9	.34	4.5
DECEMBER	49	15	25	8.6	.35	4.3
JANUARY	44	13	23	8.1	.35	4.0
FEBRUARY	47	13	25	10	.42	4.3
MARCH	80	20	41	20	.48	7.1
APRIL	181	23	81	40	.50	13.9
MAY	458	9.5	179	120	.67	31
JUNE	346	.40	101	96	.95	17.5
JULY	134	.66	24	35	1.46	4.2
AUGUST	36	.84	12	12	1.01	2.0
SEPTEMBER	35	2.2	18	10	.56	3.1
ANNUAL	97	13	48	23	.47	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1910-11, 1914-24

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	1.2	.16	.03	.01	-----	-----
3	1.5	.20	.04	.01	-----	-----
7	2.1	.40	.10	.02	-----	-----
14	2.7	.66	.30	.15	-----	-----
30	4.5	1.3	.64	.35	-----	-----
60	9.2	2.7	1.3	.62	-----	-----
90	14	6.0	3.5	2.2	-----	-----
120	16	7.6	4.7	3.0	-----	-----
183	19	11	7.6	5.4	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1909-24

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
222	327	492	616	788	927	1080

WEIGHTED SKEW = 0.206

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1910-11, 1914-24

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	282	398	444	-----	-----	-----
3	271	384	425	-----	-----	-----
7	252	358	394	-----	-----	-----
15	218	320	358	-----	-----	-----
30	181	272	309	-----	-----	-----
60	139	209	240	-----	-----	-----
90	111	168	194	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1910-11, 1914-24

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
306	185	115	75	56	38	30	24	20	17	13	3.1	1.4	.58	.35	.10	.10

06073000 DEARBORN RIVER NEAR CLEMONS, MT

LOCATION.--Lat 47°17'30", long 112°27'00", in SE¼SE¼ sec.23, T.18 N., R.7 W., Lewis and Clark County, Hydrologic Unit 10030102, on right bank 300 ft (91 m) upstream from highway bridge, 0.5 mi (0.8 km) southeast of former post office at Clemons, 2 mi (3 km) downstream from Falls Creek, 14 mi (23 km) south of Augusta, and at mile 36 (58 km).

DRAINAGE AREA.--123 mi^2 (319 km^2).

PERIOD OF RECORD.--April 1921 to September 1923, May 1929 to September 1953. May 1908 to December 1911 at site 2.5 mi (4.0 km) upstream; records not equivalent owing to tributary inflow (published as "above Falls Creek, near Clemons" in WSP 1309). Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1921, 1930, 1931.

GAGE.--Water-stage recorder. Altitude of gage is 4,560 ft (1,390 m), by barometer. Prior to Apr. 8, 1931, wire-weight gage at same site and datum.

REMARKS.--Diversions for irrigation of about 2,500 acres (10.1 km^2) in Flat Creek drainage, all of which lies below station.

AVERAGE DISCHARGE.--26 years (1921-23, 1929-53), 116 ft^3/s (3.285 m^3/s) 83,980 acre-ft/yr (104 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,200 ft^3/s (90.6 m^3/s) June 4, 1953, gage height, 6.20 ft (1.890 m); minimum, 7.4 ft^3/s (0.21 m^3/s) Oct. 22, 23, 1936, gage height, 0.64 ft (0.195 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1922-23, 1930-53

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	111	11	44	24	.56	3.1
NOVEMBER	125	22	45	24	.53	3.2
DECEMBER	97	20	39	19	.49	2.8
JANUARY	65	18	33	12	.37	2.4
FEBRUARY	51	18	31	11	.34	2.2
MARCH	104	18	36	18	.49	2.6
APRIL	440	25	128	107	.84	9.2
MAY	675	50	366	161	.44	26.4
JUNE	1210	23	457	319	.70	32.9
JULY	364	14	126	104	.83	9.0
AUGUST	213	11	49	45	.92	3.5
SEPTEMBER	109	9.4	35	23	.67	2.5
ANNUAL	214	24	116	55	.48	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1921-75

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
660	1150	2010	2760	4430	6370	10000

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1922-23, 1931-53

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	16	11	8.8	7.4	6.0	-----
3	16	11	8.9	7.5	6.1	-----
7	17	11	9.4	8.0	6.6	-----
14	17	12	9.9	8.3	6.9	-----
30	19	13	11	8.9	7.3	-----
60	23	15	12	10	7.9	-----
90	26	18	14	12	9.1	-----
120	29	20	17	14	12	-----
183	32	23	19	17	14	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1922-23, 1930-53

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1090	1790	2120	2400	2540	-----
3	1010	1630	1910	2160	2270	-----
7	850	1350	1580	1780	1870	-----
15	684	1080	1260	1430	1510	-----
30	541	852	1010	1150	1230	-----
60	422	653	762	857	906	-----
90	326	514	610	699	748	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1922-23, 1930-53

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1040	522	326	202	130	72	51	41	34	28	24	20	16	12	10	8.8	7.6

06074000 MISSOURI RIVER AT CASCADE, MT

LOCATION.--Lat 47°16', long 111°42', in SW¼NE¼ sec.35, T.18 N., R.1 W., Cascade County, Hydrologic Unit 10030102, at highway bridge at Cascade.

DRAINAGE AREA.--18,493 mi² (47,897 km²).

PERIOD OF RECORD.--July 1902 to September 1915.

REVISED RECORDS.--WSP 1309: 1903-04, 1906-07, 1908(M), 1909, 1911, 1913-14, drainage area.

GAGE.--Nonrecording gage. Datum of gage is 3,337.8 ft (1,017.36 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Diversions for irrigation of about 588,000 acres (2,380 km²) above station. Flow regulated by Hauser Lake and Canyon Ferry powerplants.

AVERAGE DISCHARGE.--13 years (1902-15), 6,360 ft³/s (180.1 m³/s), 4,608,000 acre-ft/yr (5,680 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 54,250 ft³/s (1,540 m³/s) June 5, 1908, gage height, 16.7 ft (5.09 m); minimum observed, 800 ft³/s (22.7 m³/s) Sept. 2, 1914, gage height, 3.1 ft (0.94 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1903-15

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	6320	2160	4320	1470	.34	5.7
NOVEMBER	6150	2900	4370	1130	.26	5.7
DECEMBER	4300	2700	3480	473	.14	4.6
JANUARY	3600	2300	3130	395	.13	4.1
FEBRUARY	5700	3000	3500	754	.22	4.6
MARCH	9350	3100	4810	1640	.34	6.3
APRIL	11500	3640	7430	2110	.28	9.7
MAY	15900	3940	11600	3560	.31	15.2
JUNE	36700	8080	18900	7720	.41	24.8
JULY	18700	2840	7810	4090	.52	10.2
AUGUST	6010	1800	3510	1370	.39	4.6
SEPTEMBER	5370	1930	3460	1120	.32	4.5
ANNUAL	7910	3660	6360	1250	.20	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1904-15

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	1910	1340	1070	868	-----	-----
3	2060	1570	1350	1180	-----	-----
7	2260	1850	1660	1530	-----	-----
14	2350	1940	1750	1620	-----	-----
30	2470	2040	1840	1690	-----	-----
60	2740	2290	2080	1910	-----	-----
90	3020	2570	2330	2150	-----	-----
120	3290	2770	2510	2310	-----	-----
183	3580	3000	2720	2490	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
--	--	--	--	--	--	--

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1903-15

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	25100	34600	40800	47920	-----	-----
3	24600	34000	39600	46200	-----	-----
7	23700	32200	37300	43100	-----	-----
15	22100	29800	34300	39400	-----	-----
30	19900	26300	30000	34200	-----	-----
60	16700	20900	22700	24250	-----	-----
90	14100	17100	18200	25100	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1903-15

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
29700	18600	13600	10700	8250	6050	5050	4150	3650	3310	3020	2700	2310	1960	1800	1700	1290

06074500 SMITH RIVER NEAR WHITE SULPHUR SPRINGS, MT

LOCATION.--Lat 46°40', long 110°44', near center of sec.33, T.11 N., R.8 E., Meagher County, Hydrologic Unit 10030103, at Meachen Ranch, 12 mi (19 km) northeast of White Sulphur Springs.

DRAINAGE AREA.--30.7 mi^2 (79.5 km^2).

PERIOD OF RECORD.--October 1923 to September 1931, February 1934 to September 1936.

REVISED RECORDS.--WSP 1309: 1923, 1924(M), 1926(M), 1927, 1928-29(M), 1930, 1931(M), 1934(M), 1936(M).

GAGE.--Nonrecording gage. Altitude of gage is 5,600 ft (1,707 m), from topographic map. Prior to June 27, 1927, nonrecording gage at site 150 ft (46 m) downstream at same datum.

REMARKS.--A few small diversions for irrigation above station.

AVERAGE DISCHARGE.--11 years (1922-31, 1934-36), 20.7 ft^3/s (0.586 m^3/s), 15,000 acre-ft/yr (18.5 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 770 ft^3/s (21.8 m^3/s) Apr. 11, 1936, gage height, 4.20 ft (1.280 m), from graph of gage readings, from rating curve extended above 180 ft^3/s (5.10 m^3/s) by logarithmic plotting; no flow Sept. 8, 12, 1931.

MONTHLY AND ANNUAL MEAN DISCHARGES 1923-31, 1935-36

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	16	4.0	10	4.0	.40	4.0
NOVEMBER	18	2.9	9.3	4.2	.45	3.7
DECEMBER	12	2.9	7.5	3.5	.47	3.0
JANUARY	8.0	3.0	5.5	1.8	.32	2.2
FEBRUARY	8.0	2.0	5.4	1.9	.35	2.2
MARCH	27	3.5	9.1	6.6	.73	3.7
APRIL	69	10	35	24	.68	14.1
MAY	135	16	61	33	.54	24.6
JUNE	250	12	61	66	1.08	24.6
JULY	65	6.3	23	17	.75	9.2
AUGUST	27	3.8	12	7.7	.64	4.8
SEPTEMBER	18	2.3	9.2	5.3	.57	3.7
ANNUAL	43	7.3	21	10	.50	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1924-31, 1935-36

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	3.1	2.0	1.6	1.4	-----	-----
3	3.4	2.2	1.8	1.5	-----	-----
7	3.6	2.4	1.9	1.6	-----	-----
14	3.9	2.6	2.1	1.7	-----	-----
30	4.4	2.9	2.3	1.9	-----	-----
60	4.8	3.3	2.7	2.3	-----	-----
90	5.4	3.9	3.2	2.8	-----	-----
120	6.0	4.4	3.7	3.2	-----	-----
183	7.1	5.1	4.3	3.7	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1923-36

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	160 1%
58	120	249	356	523	669	854

WEIGHTED SKEW = 0.213

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1923-31, 1935-36

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	125	244	338	-----	-----	-----
3	110	209	288	-----	-----	-----
7	97	181	247	-----	-----	-----
15	83	151	205	-----	-----	-----
30	73	131	175	-----	-----	-----
60	62	105	134	-----	-----	-----
90	50	83	104	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1923-31, 1935-36

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
168	80	52	35	25	17	13	10	8.1	6.5	5.3	4.2	3.0	2.4	2.0	.98	.23

BEST DOCUMENT AVAILABLE

06077000 SHEEP CREEK NEAR WHITE SULPHUR SPRINGS, MT

LOCATION.--Lat 46°46'05", long 110°48'33" in SW¼SW¼SE¼ sec.26., T.12 N., R.7 E., Meagher County, Hydrologic Unit 10030103, Lewis and Clark National Forest, on right bank 7 mi (11 km) upstream from Moose Creek and 16 mi (26 km) north of White Sulphur Springs.

DRAINAGE AREA.--42.5 mi^2 (141.2 km^2).

PERIOD OF RECORD.--July 1941 to September 1972.

REVISED RECORDS.--WSP 1309: 1942(M). WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 5,820 ft (1,774 m), by barometer. Prior to Oct. 1, 1942, nonrecording gages at site 1,000 ft (305 m) upstream at datum 7.03 ft (2.143 m) higher, and Oct. 1, 1942, to May 3, 1955, at site 700 ft (213 m) upstream at datum 5.33 ft (1.624 m) higher.

REMARKS.--Diversions for irrigation of about 200 acres (0.81 km^2) above station.

AVERAGE DISCHARGE.--31 years, 31.9 ft^3/s (0.903 m^3/s), 23,110 acrs-ft/yr (28.5 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 460 ft^3/s (13.0 m^3/s) June 4, 1953, gage height, 5.80 ft (1.768 m), from graph based on gage readings, site and datum then in use; minimum daily, 3.5 ft^3/s (0.099 m^3/s) Jan. 18-20, 1943.

MONTHLY AND ANNUAL MEAN DISCHARGES 1942-72

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	34	9.9	16	4.6	.29	4.1
NOVEMBER	24	8.3	13	3.2	.25	3.4
DECEMBER	17	6.1	10	2.3	.22	2.7
JANUARY	13	5.9	9.2	1.9	.20	2.4
FEBRUARY	14	6.2	9.1	1.9	.20	2.4
MARCH	21	6.2	9.3	2.8	.30	2.4
APRIL	47	9.0	21	11	.53	5.4
MAY	169	46	95	35	.37	24.8
JUNE	232	44	115	56	.49	30.2
JULY	84	19	43	14	.32	11.3
AUGUST	39	12	24	6.2	.26	6.2
SEPTEMBER	36	12	18	4.9	.27	4.8
ANNUAL	51	18	32	8.3	.26	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1942-75

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
147	209	309	388	502	596	695

WEIGHTED SKEW = 0.219

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1943-72

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	5.8	4.7	4.2	3.8	3.4	-----
3	6.1	5.0	4.4	4.0	3.6	-----
7	6.8	5.6	5.0	4.5	4.0	-----
14	7.3	6.0	5.4	4.9	4.4	-----
30	8.0	6.7	6.1	5.6	5.1	-----
60	8.6	7.1	6.5	5.9	5.4	-----
90	8.8	7.5	6.9	6.5	6.0	-----
120	9.2	7.9	7.4	7.0	6.6	-----
183	11	9.2	8.6	8.3	7.9	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1942-72

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	191	276	339	427	498	-----
3	182	262	321	404	471	-----
7	168	240	293	368	428	-----
15	151	214	262	327	381	-----
30	131	185	224	278	322	-----
60	102	138	163	196	221	-----
90	82	109	126	147	163	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1942-72

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
240	122	81	57	41	25	19	15	13	11	9.3	7.8	6.8	5.9	5.5	5.0	4.2

BEST DOCUMENT AVAILABLE

06077500 SMITH RIVER NEAR EDEN, MT

LOCATION.--Lat 47°11'24", long 111°23'12", on SW¼SW¼ sec.29, T.17 N., R.3 E., Cascade County, Hydrologic Unit 10030103, on left bank 0.3 mi (0.5 km) upstream from Mullens Creek, 2.3 mi (3.7 km) upstream from Hound Creek, and 7.7 mi (12.4 km) southwest of Eden.

DRAINAGE AREA.--1,594 mi² (4,128 km²).

PERIOD OF RECORD.--April 1951 to September 1969.

REVISED RECORDS.--WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 3,500 ft (1,067 m), by barometer.

REMARKS.--Diversions for irrigation of about 24,500 acres (99.2 km²) above station. Flow affected by storage in Smith River Reservoir.

AVERAGE DISCHARGE.--18 years, 338 ft³/s (9.572 m³/s), 244,900 acre-ft/yr (302 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,300 ft³/s (348 m³/s) June 4, 1953, gage height, 10.46 ft (3.188 m), from rating curve extended above 3,800 ft³/s (108 m³/s) on basis of slope-area measurement of peak flow; maximum gage height, 12.50 ft (3.810 m) Feb. 4, 1963 (backwater from ice); minimum discharge observed, 3.1 ft³/s (0.088 m³/s) Sept. 1, 1961, gage height, -0.17 ft (-0.052 m), result of discharge measurement.

MONTHLY AND ANNUAL MEAN DISCHARGES 1952-69

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	501	52	169	111	.66	4.2
NOVEMBER	370	57	150	81	.54	3.7
DECEMBER	260	31	110	62	.56	2.7
JANUARY	211	43	99	52	.52	2.4
FEBRUARY	350	49	137	78	.57	3.4
MARCH	372	63	179	81	.45	4.4
APRIL	1160	137	392	265	.68	9.7
MAY	2090	269	939	527	.56	23.1
JUNE	3120	279	1200	892	.74	29.7
JULY	833	36	374	229	.61	9.2
AUGUST	344	16	154	95	.61	3.8
SEPTEMBER	537	30	151	127	.84	3.7
ANNUAL	614	107	338	159	.47	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1952-69

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	32	13	7.6	4.9	-----	-----
3	39	17	10	6.4	-----	-----
7	54	25	15	9.3	-----	-----
14	67	34	21	14	-----	-----
30	76	44	31	22	-----	-----
60	86	53	40	31	-----	-----
90	95	61	47	37	-----	-----
120	102	66	52	42	-----	-----
183	111	72	57	48	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1951-75

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1150	2060	3660	5080	7100	8830	10600

WEIGHTED SKEW = 0.188

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1952-69

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1780	3300	4800	7470	-----	-----
3	1660	3060	4270	6450	-----	-----
7	1530	2640	3620	5200	-----	-----
15	1360	2290	3070	4280	-----	-----
30	1210	2020	2680	3600	-----	-----
60	963	1570	2030	2660	-----	-----
90	785	1250	1580	2020	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1952-69

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
2740	1290	805	563	427	288	205	160	132	109	88	60	43	30	22	15	4.9

06078200 MISSOURI RIVER NEAR ULM, MT

LOCATION.--Lat 47°26'09", long 111°23'07", in NE¼NW¼NW¼ sec.5, T.19 N., R.3 E., Cascade County, Hydrologic Unit 10030102, on left bank 5.6 mi (9.0 km) east of Ulm and 9.1 mi (14.6 km) downstream from Smith River.

DRAINAGE AREA.--20,941 mi^2 (54,237 km^2).

PERIOD OF RECORD.--August 1957 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,313.27 ft (1,009.885 m) National Geodetic Vertical Datum of 1929

REMARKS.--Flow regulated by 10 smaller irrigation reservoirs and power plants, Clark Canyon Reservoir, and Canyon Ferry Reservoir. Diversions for irrigation of about 630,400 acres (2,550 km^2) above station.

AVERAGE DISCHARGE.--22 years, 6,784 ft^3/s (192.1 m^3/s), 4,915,000 acre-ft/yr (6.06 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,500 ft^3/s (779 m^3/s) June 22, 1964, gage height, 14.44 ft (4.401 m), maximum gage height, 14.64 ft (4.462 m) June 22, 1975; minimum daily discharge, 1,700 ft^3/s (48.1 m^3/s) June 17, 1961.

MONTHLY AND ANNUAL MEAN DISCHARGES 1958-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	11200	3180	5320	1650	.31	6.5
NOVEMBER	9500	3450	5780	1520	.26	7.1
DECEMBER	10700	4090	6010	1330	.22	7.4
JANUARY	7180	4440	5920	840	.14	7.3
FEBRUARY	7360	4030	5940	990	.17	7.3
MARCH	9650	3560	6170	1620	.26	7.6
APRIL	12100	3070	7090	2580	.36	8.7
MAY	19800	3500	10200	4280	.42	12.5
JUNE	21900	2970	11400	5200	.46	14
JULY	19500	3110	7900	3880	.49	9.7
AUGUST	7700	3080	5000	1300	.26	6.1
SEPTEMBER	6950	2200	4730	1290	.27	5.8
ANNUAL	9650	3990	6790	1470	.22	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1959-80

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	3220	2490	2160	1920	-----	-----
3	3450	2700	2370	2120	-----	-----
7	3700	2910	2550	2280	-----	-----
14	3840	3070	2710	2440	-----	-----
30	4080	3280	2890	2590	-----	-----
60	4350	3500	3100	2790	-----	-----
90	4520	3670	3290	3000	-----	-----
120	4680	3880	3520	3260	-----	-----
183	5090	4220	3830	3530	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1953-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
12700	17400	25000	31000	37000	44000	49000

WEIGHTED SKEW = 0.247

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1958-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	16500	22300	25400	28600	-----	-----
3	16100	21800	24900	28200	-----	-----
7	15400	20900	24000	27200	-----	-----
15	14400	19800	22900	26300	-----	-----
30	13000	17900	20800	24200	-----	-----
60	11500	15300	17600	20200	-----	-----
90	10300	13600	15500	17900	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1958-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
21400	14700	11300	9220	7980	6970	6460	5980	5360	4870	4400	3790	3350	2930	2630	2360	2110

BEST DOCUMENT AVAILABLE

06078500 NORTH FORK SUN RIVER NEAR AUGUSTA, MT

LOCATION.--Lat 47°38'30", long 112°51'30', in SW¼SW¼ sec.23, T.22 N., R.10 W., Teton County, Hydrologic Unit 10030104, on left bank 400 ft (122 m) upstream from Arsenic Creek, 1 mi (2 km) upstream from confluence with South Fork, 25 mi (40 km) northwest of Augusta.

DRAINAGE AREA.--258 mi^2 (668 km^2).

PERIOD OF RECORD.--May 1911 to September 1912, October 1945 to September 1968. Monthly discharge only for some periods, published in WSP 1309. Prior to October 1959, published as North Fork of North Fork Sun River near Augusta.

GAGE.--Water-stage recorder. Datum of gage is 4,785.72 ft (1,458.687 m) National Geodetic Vertical Datum of 1929 (levels by Water and Power Resources Services). May 27, 1911, to Sept. 30, 1912, nonrecording gage near present site at different datum. Oct. 1, 1945, to July 22, 1946, nonrecording gage at site 0.75 mi (1.21 km) downstream at different datum. July 23, 1946, to June 8, 1964, water-stage recorder at present site and datum. June 20, 1964, to Sept. 11, 1964, nonrecording gage at site 0.75 mi (1.21 km) downstream at different datum.

REMARKS.--No regulation or diversion above station.

AVERAGE DISCHARGE.--24 years (1911-12, 1945-68), 361 ft^3/s (10.22 m^3/s), 261,400 acre-ft/yr (322 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 51,100 ft^3/s (1,447 m^3/s) June 8, 1964, gage height, 15.82 ft (4.822 m), from floodmark, from slope-area measurement of peak flow; minimum, 27 ft^3/s (0.76 m^3/s) Nov. 21, 1949, gage height, 0.79 ft (0.241 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1912, 1946-68

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	286	72	122	51	.42	2.8
NOVEMBER	191	65	102	30	.30	2.4
DECEMBER	152	59	83	24	.28	1.9
JANUARY	96	43	67	13	.20	1.5
FEBRUARY	100	47	66	14	.21	1.5
MARCH	113	44	68	17	.25	1.6
APRIL	512	76	225	138	.61	5.2
MAY	1930	688	1270	332	.26	29.4
JUNE	3220	729	1540	616	.40	35.7
JULY	1010	203	484	233	.48	11.2
AUGUST	249	95	167	41	.25	3.9
SEPTEMBER	247	84	123	37	.30	2.8
ANNUAL	468	253	360	68	.19	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1947-68

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	41	35	33	30	-----	-----
3	43	37	34	31	-----	-----
7	47	40	36	34	-----	-----
14	51	44	41	38	-----	-----
30	57	49	46	43	-----	-----
60	61	53	49	46	-----	-----
90	64	55	52	49	-----	-----
120	67	59	55	53	-----	-----
183	80	67	62	59	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1911-68

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
2000	3100	4000	4650	6200	10560	17500

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1912, 1946-68

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	2500	3710	5290	8790	-----	-----
3	2360	3450	4680	7100	-----	-----
7	2220	3090	3880	5180	-----	-----
15	2050	2710	3210	3910	-----	-----
30	1850	2320	2650	3050	-----	-----
60	1440	1770	1970	2190	-----	-----
90	1110	1350	1490	1660	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1912, 1946-68

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.8%
2830	1710	1200	715	424	204	141	112	92	79	68	57	51	45	42	38	32

06080000 SUN RIVER NEAR AUGUSTA, MT

LOCATION.--Lat 47°37', long 112°42', in NW¼ sec.36, T.22 N., R.9 W., Lewis and Clark County, Hydrologic Unit 10030104, about 150 ft (46 m) upstream from diversion dam and 18 mi (29 km) northwest of Augusta.

DRAINAGE AREA.--609 mi^2 (1,577 km^2).

PERIOD OF RECORD.--August 1889 to December 1890, July 1904 to September 1940. Prior to 1891, published as "Sun River above Augusta."

REVISED RECORDS.--WSP 1309: 1908(M), drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,474 ft (1,364 m) National Geodetic Vertical Datum of 1929 (levels by Water and Power Resources Service). Prior to Jan. 1, 1916, nonrecording gages at site 8 mi (13 km) downstream at different datum. Jan. 1, 1916, to Sept. 30, 1936, slope gage on diversion dam 150 ft (46 m) downstream at same datum.

REMARKS.--Flow regulated since 1930 by Gibson Dam. No diversions above station prior to 1916. Records for 1916-40 includes flow in Pishkun Canal.

COOPERATION.--Records for 1916-36 and Pishkun Canal data furnished by Water and Power Resources Service.

AVERAGE DISCHARGE.--37 years (1889-90, 1904-40), 820 ft^3/s (23.22 m^3/s), 594,100 acre-ft/yr (733 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,300 ft^3/s (915 m^3/s) June 21, 1916, gage height, 11.4 ft (3.47 m); minimum, 3.4 ft^3/s (0.096 m^3/s) Apr. 18, 1938, gage height, 0.02 ft (0.006 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1890, 1905-40

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	543	30	238	129	.54	2.4
NOVEMBER	682	24	251	179	.71	2.6
DECEMBER	953	14	201	166	.83	2.1
JANUARY	586	20	175	125	.71	1.8
FEBRUARY	421	20	171	103	.60	1.7
MARCH	579	22	189	129	.68	1.9
APRIL	3340	50	708	658	.93	7.2
MAY	6260	917	2650	1140	.43	27.1
JUNE	7840	836	3170	1750	.55	32.4
JULY	4350	265	1230	727	.59	12.6
AUGUST	982	182	508	219	.43	5.2
SEPTEMBER	714	50	285	131	.46	2.9
ANNUAL	1620	375	817	290	.36	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1906-40

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	69	28	17	11	6.5	-----
3	78	34	20	13	7.7	-----
7	85	36	22	14	7.9	-----
14	93	40	24	15	8.9	-----
30	106	47	29	19	11	-----
60	118	53	33	21	12	-----
90	134	62	38	25	14	-----
120	148	67	41	26	15	-----
183	183	94	62	42	26	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1890-1964

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
4200	6360	9530	11900	17500	24500	36000

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1890, 1905-40

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	6120	9760	12300	15600	18000	-----
3	5730	8740	10600	12800	14300	-----
7	5120	7680	9240	11000	12200	-----
15	4430	6560	7860	9360	10400	-----
30	3800	5520	6540	7690	8460	-----
60	2970	4160	4840	5600	6110	-----
90	2380	3250	3760	4340	4740	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1890, 1905-40

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
6750	3620	2310	1500	1170	578	385	296	233	180	139	53	29	22	18	15	13

BEST DOCUMENT AVAILABLE

06080900 SUN RIVER BELOW DIVERSION DAM, NEAR AUGUSTA, MT

LOCATION.--Lat 47°37'10", long 112°41'28", near center of east line of sec.36, T.22 N., R.9 W., Lewis and Clark County, Hydrologic Unit 10030104, Lewis and Clark National Forest, on road bridge 1.0 mi (1.6 km) downstream from diversion dam, 16.5 mi (26.5 km) northwest of Augusta, and at mile 95.6 (153.8 km).

DRAINAGE AREA.--609 mi² (1,577 km²).

PERIOD OF RECORD.--September 1967 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 4,370 ft (1,332 m), from topographic map.

REMARKS.--Flow regulated by Gibson Dam. Diversions above station into Pishkun Canal and Willow Creek feeder canal for irrigation of about 91,000 acres (368 km²) below station.

AVERAGE DISCHARGE.--12 years, 444 ft³/s (12.57 m³/s), 321,700 acre-ft/yr (397 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,000 ft³/s (906 m³/s) June 19, 1975, gage height, 19.00 ft (5.791 m); minimum daily, 20 ft³/s (0.57 m³/s) Dec. 16, 1974.

MONTHLY AND ANNUAL MEAN DISCHARGES 1968-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	470	50	145	113	.78	2.7
NOVEMBER	468	58	147	109	.74	2.8
DECEMBER	295	41	142	71	.50	2.7
JANUARY	238	78	140	54	.39	2.6
FEBRUARY	198	48	130	50	.38	2.4
MARCH	276	41	144	77	.54	2.7
APRIL	910	35	298	297	1.0	5.6
MAY	3600	289	1310	1070	.81	24.6
JUNE	6260	230	2170	1710	.79	40.7
JULY	1680	71	443	482	1.09	8.3
AUGUST	282	64	140	73	.52	2.6
SEPTEMBER	299	61	120	69	.58	2.3
ANNUAL	8'8	112	444	219	.49	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1969-80

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	37	27	23	20	-----	-----
3	41	29	25	22	-----	-----
7	43	31	26	23	-----	-----
14	47	34	28	24	-----	-----
30	58	44	37	32	-----	-----
60	75	58	50	44	-----	-----
90	83	62	55	49	-----	-----
120	95	70	61	55	-----	-----
183	113	81	69	61	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
--	--	--	--	--	--	--

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1968-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	4890	11200	15600	-----	-----	-----
3	4640	9860	13200	-----	-----	-----
7	3930	7740	9950	-----	-----	-----
15	3110	5950	7590	-----	-----	-----
30	2370	4490	5720	-----	-----	-----
60	1650	3020	3840	-----	-----	-----
90	1240	2220	2780	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1968-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
5490	2210	1090	511	322	208	171	147	121	94	78	60	48	34	30	26	21

BEST DOCUMENT AVAILABLE

06081500 WILLOW CREEK NEAR AUGUSTA, MT

LOCATION.--Lat 47°33', long 112°28', in NW¼SW¼ sec.26, T.21 N., R.7 W., Lewis and Clark County, Hydrologic Unit 10030104, just downstream from Little Willow Creek and 5 mi (8 km) northwest of Augusta.

DRAINAGE AREA.--96.1 mi^2 (249 km^2).

PERIOD OF RECORD.--June 1905 to September 1925.

REVISED RECORDS.--WSP 1309: 1907-10(M), 1916, 1921(M), drainage area.

GAGE.--Nonrecording gage. Altitude of gage is 4,150 ft (1,265 m), by barometer.

REMARKS.--Diversions for irrigation of about 2,000 acres (8.09 km^2) above station.

AVERAGE DISCHARGE.--20 years, 27.7 ft^3/s (0.784 m^3/s), 20,070 acre-ft/yr (24.7 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,150 ft^3/s (32.6 m^3/s) June 23, 1916, gage height, 10.8 ft (3.292 m), from floodmarks; no flow July 17, 1910.

MONTHLY AND ANNUAL MEAN DISCHARGES 1906-10, 1912-25

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	30	.05	13	7.9	.60	3.8
NOVEMBER	25	1.0	12	6.3	.51	3.6
DECEMBER	26	4.6	10	5.4	.52	3.1
JANUARY	37	3.7	10	8.1	.78	3.1
FEBRUARY	70	1.7	15	17	1.17	4.3
MARCH	48	4.7	16	11	.69	4.8
APRIL	50	8.3	25	13	.53	7.2
MAY	320	4.8	67	69	1.02	19.5
JUNE	363	1.9	101	110	1.09	29.6
JULY	211	1.0	40	49	1.23	11.6
AUGUST	53	.45	18	15	.84	5.2
SEPTEMBER	35	.23	13	10	.77	3.9
ANNUAL	77	7.2	28	20	.70	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1907-11, 1913-25

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT: 2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	5.5	1.9	.70	.10	-----	-----
3	5.7	2.0	.95	.45	-----	-----
7	6.1	2.3	1.1	.54	-----	-----
14	6.4	2.4	1.2	.56	-----	-----
30	7.0	2.6	1.2	.59	-----	-----
60	7.6	3.0	1.6	.80	-----	-----
90	8.2	3.5	2.0	1.1	-----	-----
120	9.1	4.1	2.4	1.4	-----	-----
183	11	4.9	2.9	1.8	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1905-25

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
64	166	414	667	1190	2070	2770

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1906-10, 1912-25

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT: 2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	165	429	707	1200	-----	-----
3	144	365	599	1020	-----	-----
7	123	306	502	862	-----	-----
15	102	249	405	692	-----	-----
30	83	188	293	476	-----	-----
60	65	136	203	314	-----	-----
90	54	108	156	234	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1906-10, 1912-25

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
300	93	57	42	33	24	18	14	11	8.4	6.0	4.0	2.0	1.0	.59	.29	.13

06084500 ELK CREEK AT AUGUSTA, MT

LOCATION.--Lat 47°29', long 112°23', in NW¼SE¼ sec.17, T.20 N., R.6 W., Lewis and Clark County, Hydrologic Unit 10030104, at old highway bridge 0.5 mi (0.8 km) from Augusta and 6 mi (10 km) upstream from mouth.

DRAINAGE AREA.--157 mi^3 (407 km^2).

PERIOD OF RECORD.--October 1904 to November 1924.

GAGE.- Nonrecording gage. Altitude of gage is 4,070 ft (1,241 m), by barometer. Apr. 20, 1907, to December 1908, nonrecording gage at site 300 ft (91 m) upstream at different datum.

REMARKS.--Diversions for irrigation of about 4,500 acres (18.2 km^2) above station.

AVERAGE DISCHARGE.--20 years (1905-24), 94.4 ft^3/s (2.673 m^3/s), 68,390 acre-ft/yr (84.3 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 4,300 ft^3/s (122 m^3/s) June 2, 1908, gage height, 6.8 ft (2.073 m), site and datum then in use, from rating curve extending above 1,200 ft^3/s (34.0 m^3/s); no flow at times.

MONTHLY AND ANNUAL MEAN DISCHARGES 1905-24

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	99	14	46	26	.55	4.1
NOVEMBER	99	15	43	23	.53	3.8
DECEMBER	60	10	34	15	.45	3.0
JANUARY	65	10	29	15	.52	2.5
FEBRUARY	97	12	32	19	.59	2.8
MARCH	115	20	47	27	.58	4.1
APRIL	164	26	68	42	.61	6.0
MAY	965	11	262	214	.82	23.1
JUNE	1280	4.9	385	377	.98	34
JULY	417	2.6	105	100	.96	9.2
AUGUST	119	1.0	45	37	.82	4.0
SEPTEMBER	114	.87	38	30	.79	3.4
ANNUAL	212	20	94	56	.59	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1906-24

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	13	2.4	.50	.10	-----	-----
3	15	3.7	.80	.10	-----	-----
7	16	4.0	.90	.10	-----	-----
14	17	5.0	1.0	.10	-----	-----
30	18	5.5	2.4	1.0	-----	-----
60	21	8.0	4.2	2.2	-----	-----
90	24	9.9	5.5	3.2	-----	-----
120	27	13	8.2	5.2	-----	-----
183	32	18	13	9.2	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1905-75

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
401	858	2130	3270	5310	6800	8700

WEIGHTED SKEW =

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1905-24

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	833	1920	2740	3800	-----	-----
3	742	1610	2240	3010	-----	-----
7	630	1350	1880	2550	-----	-----
15	498	1040	1440	1970	-----	-----
30	386	769	1050	1420	-----	-----
60	278	530	714	953	-----	-----
90	215	395	528	707	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1905-24

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1010	356	204	129	95	67	50	41	34	28	22	14	7.8	2.3	.68	.20	.20

BEST DOCUMENT AVAILABLE

06085800 SUN RIVER AT SIMMS, MT

LOCATION.--Lat 47°30'06", long 111°55'56", in NW¼NW¼SE¼ sec.12, T.20 N., R.3 W., Cascade County, Hydrologic Unit 10030104, on left bank 500 ft (152 m) downstream from county bridge, 0.7 mi (1.1 km) north of Simms, and 0.7 mi (1.1 km) downstream from Simms Creek.

DRAINAGE AREA.--1,320 mi^2 (3,419 km^2).

PERIOD OF RECORD.--May to June 1953 (in WSP 1320-B), May to June 1964 (in WSP 1840-B), March 1966 to Sept. 30, 1979.

GAGE.--Water-stage recorder. Datum of gage is 3,546.58 ft (1,080.998 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Flow regulated by Gibson, Pishkun, Willow Creek, and Nilan Reservoirs. Diversions for irrigation of about 105,000 acres (425 km^2) above station.

AVERAGE DISCHARGE.--13 years, 549 ft^3/s (15.55 m^3/s), 397,800 acre-ft/yr (490 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,000 ft^3/s (1,420 m^3/s), June 9, 1964, gage height, about 13.7 ft (4.18 m), from floodmark, from slope-area measurement of peak flow at site 4 mi (6 km) upstream; minimum daily, 19 ft^3/s (0.54 m^3/s) Sept. 29, 1977.

MONTHLY AND ANNUAL MEAN DISCHARGES 1967-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STAN-DARD DEVIA-TION (CFS)	COEFFI-CIENT OF VARI-ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	519	89	209	119	.57	3.2
NOVEMBER	596	120	225	117	.52	3.4
DECEMBER	456	101	200	85	.42	3.0
JANUARY	314	137	206	59	.28	3.1
FEBRUARY	291	96	206	63	.30	3.1
MARCH	473	104	250	114	.46	3.8
APRIL	1130	81	370	319	.86	5.6
MAY	4120	101	1400	1210	.86	21.2
JUNE	8560	109	2670	2480	.93	40.4
JULY	2170	59	525	602	1.15	8.0
AUGUST	383	53	180	106	.59	2.7
SEPTEMBER	422	49	163	101	.62	2.5
ANNUAL	1180	126	549	299	.54	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1967-79

PERIOD (CON-SECU-TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	56	37	29	23	-----	-----
3	61	41	33	27	-----	-----
7	68	46	37	31	-----	-----
14	85	56	43	34	-----	-----
30	93	63	51	42	-----	-----
60	116	82	69	60	-----	-----
90	130	93	79	68	-----	-----
120	148	106	89	77	-----	-----
183	169	123	103	90	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1964-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
4200	6400	9600	12000	17100	24500	38000

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1967-79

PERIOD (CON-SECU-TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	5410	13100	16500	24800	-----	-----
3	5010	11800	16400	21600	-----	-----
7	4350	9500	12700	16000	-----	-----
15	3470	7250	9560	12000	-----	-----
30	2650	5510	7330	9320	-----	-----
60	1800	3620	4810	6190	-----	-----
90	1380	2620	3420	4330	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1967-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
6280	2440	1240	622	406	277	235	202	176	153	125	91	70	50	41	36	25

06086000 SUN RIVER AT FORT SHAW, MT

LOCATION.--Lat 47°31'10", long 111°48'50", on west line of sec.1, T.20 N., R.2 W., Cascade County, Hydrologic Unit 10030104, at highway bridge at Fort Shaw.

DRAINAGE AREA.--1.417 mi^2 (3,670 km^2).

PERIOD OF RECORD.--June 1912 to September 1928.

REVISED RECORDS.--WSP 1309: 1914-17(M), 1918, 1920, 1924.

GAGE.--Water-stage recorder. Altitude of gage is 3,465 ft (1,056 m), from topographic map. Prior to May 20, 1925, nonrecording gages at several sites within 0.2 mi (0.3 km) of present site at different datums.

REMARKS.--Numerous diversions for irrigation above and below stations. Diversions to Pishkun Canal and Pishkun Reservoir began in 1916. Some regulation in Willow Creek Reservoir.

AVERAGE DISCHARGE.--16 years (1913-28), 929 ft^3/s (26.30 m^3/s), 673,100 acre-ft/yr (830 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft^3/s (566 m^3/s) June 21, 1916, gage height, 11.5 ft (3.51 m) from graph based on gage readings; minimum observed, 38 ft^3/s (1.076 m^3/s) Aug. 27, 1926.

MONTHLY AND ANNUAL MEAN DISCHARGES 1913-28

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	708	181	402	150	.37	3.6
NOVEMBER	622	165	369	125	.34	3.3
DECEMBER	423	190	297	79	.27	2.7
JANUARY	600	170	280	104	.37	2.5
FEBRUARY	824	168	312	183	.59	2.8
MARCH	669	200	310	123	.40	2.8
APRIL	1160	308	755	259	.34	6.8
MAY	5229	1490	2980	1010	.34	26.8
JUNE	7630	723	3490	2040	.58	31.4
JULY	5150	103	1160	1210	1.04	10.4
AUGUST	938	120	393	230	.59	3.5
SEPTEMBER	845	134	382	185	.49	3.4
ANNUAL	1770	415	929	356	.38	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1914-28

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	129	74	53	40	-----	-----
3	147	91	68	52	-----	-----
7	177	111	82	61	-----	-----
14	195	131	102	81	-----	-----
30	210	147	119	99	-----	-----
60	224	170	148	133	-----	-----
90	253	191	164	144	-----	-----
120	269	205	178	57	-----	-----
183	309	231	196	170	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
--	--	--	--	--	--	--

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1913-28

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	6580	10000	12700	16500	-----	-----
3	6160	9210	11400	14300	-----	-----
7	5620	8310	10200	12600	-----	-----
15	4800	7180	8860	11100	-----	-----
30	4090	6100	7480	9240	-----	-----
60	3190	4620	5540	6680	-----	-----
90	2500	3550	4230	5070	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1913-28

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
7690	4020	2490	1660	1070	624	459	375	312	270	234	200	165	124	101	82	49

BEST DOCUMENT AVAILABLE

06088300 MUDDY CREEK NEAR VAUGHN, MT

LOCATION.--Lat 47°37'30", long 111°38'05", in NW¼NE¼ sec.32, T.22 N., R.1 E., Cascade County, Hydrologic Unit 10030104, on left bank 200 ft (61 m) downstream from bridge on county road and 6.2 mi (10.0 km) northwest of Vaughn.

DRAINAGE AREA.--282 mi² (730 km²).

PERIOD OF RECORD.--June 1968 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,441.79 ft (1,049.058 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Natural flow increased by wastage from Greenfields Irrigation Project. Diversions for irrigation of about 400 acres (1.62 km²) above station.

AVERAGE DISCHARGE.--11 years, 123 ft³/s (3.483 m³/s), 89,110 acre-ft/yr (110 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,110 ft³/s (81.1 m³/s) May 7, 1975, gage height, 13.46 ft (4.103 m); minimum daily, 8.0 ft³/s (0.23 m³/s) Dec. 8, 1972.

MONTHLY AND ANNUAL MEAN DISCHARGES 1969-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	145	54	88	25	.28	6.1
NOVEMBER	65	42	56	6.7	.12	3.9
DECEMBER	52	.00	38	15	.40	2.6
JANUARY	45	.00	29	12	.42	2.0
FEBRUARY	48	.00	32	13	.41	2.2
MARCH	238	.00	66	75	1.14	4.6
APRIL	162	28	51	39	.76	3.6
MAY	264	75	122	52	.43	8.5
JUNE	455	129	229	88	.38	15.9
JULY	367	231	279	47	.17	19.4
AUGUST	402	138	293	75	.26	20.4
SEPTEMBER	218	71	156	49	.31	10.8
ANNUAL	149	84	121	19	.15	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1970-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	20	14	11	9.2	-----	-----
3	20	15	13	11	-----	-----
7	21	17	15	13	-----	-----
14	23	19	17	15	-----	-----
30	27	22	20	18	-----	-----
60	32	26	23	20	-----	-----
90	34	29	26	23	-----	-----
120	37	31	28	25	-----	-----
183	50	44	41	39	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1968-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
487	831	1490	2050	2940	3730	4660

WEIGHTED SKEW = 0.296

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1969-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	683	1150	1570	-----	-----	-----
3	609	881	1080	-----	-----	-----
7	504	659	759	-----	-----	-----
15	395	464	503	-----	-----	-----
30	345	401	430	-----	-----	-----
60	311	344	357	-----	-----	-----
90	280	318	333	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1969-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
526	356	289	247	208	154	92	64	51	40	32	27	21	8.0	8.0	8.0	8.0

BEST DOCUMENT AVAILABLE

06088500 MUDDY CREEK AT VAUGHN, MT

LOCATION.--Lat 47°33'42", long 111°32'33", near center of S½NE¼ sec.24, T.21 N., R.1 E., Cascade County, Hydrologic Unit 10030104, on right bank, 30 ft (9 m) upstream from old highway bridge at Vaughn, 1.5 mi (2.4 km) upstream from mouth.

DRAINAGE AREA.--314 mi² (813 km²).

PERIOD OF RECORD.--May 1925 to February 1926, April 1934 to September 1968, July 1971 to current year.

REVISED RECORDS.--WSP 856: 1937. WSP 1509: 1934-35, 1941(M). WSP 1559: 1956. WSP 1629: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,337.64 ft (1,017.313 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). May 21, 1925, to Feb. 8, 1926, nonrecording gate at site 500 ft (152 m) downstream at different datum. Apr. 19, 1925, to Sept. 30, 1955, at present site at datum 1.00 ft (0.305 m) higher. May 18, 1955, to Apr. 25, 1960, and Sept. 24, 1962, to Sept. 30, 1968, auxillary crest-stage gage. Oct. 1, 1955, to Sept. 30, 1968, nonrecording gage at bridge 30 ft (9 m) downstream at present datum.

REMARKS.--Natural flow increased by wastage from Sun River Canal and by return flow from irrigation. Diversions for irrigation of about 700 acres (2.83 km²) above station.

AVERAGE DISCHARGE.--42 years (1934-68, 1971-79), 127 ft³/s (3,597 m³/s), 92,010 acre-ft/yr (113 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,600 ft³/s (215 m³/s) June 4, 1953, gage height, 17.7 ft, (5.40 m), present datum, from floodmarks, from rating curve extended above 3,000 ft³/s (85.0 m³/s) on basis of slope-area measurement of peak flow; minimum, 2.0 ft³/s (0.057 m³/s) Mar. 16, 17, 1972, gage height, 1.20 ft (0.366 m). result of ice jams upstream.

MONTHLY AND ANNUAL MEAN DISCHARGES 1935-68, 1972-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	200	48	110	32	.29	7.3
NOVEMBER	113	33	62	14	.22	4.1
DECEMBER	131	20	46	18	.38	3.0
JANUARY	67	17	34	10	.30	2.3
FEBRUARY	97	10	37	15	.41	2.4
MARCH	283	23	61	52	.85	4.1
APRIL	182	18	43	26	.61	2.8
MAY	305	53	134	55	.41	8.9
JUNE	480	86	239	92	.38	15.8
JULY	416	78	264	84	.32	17.5
AUGUST	488	122	298	85	.28	19.7
SEPTEMBER	270	69	182	48	.27	12
ANNUAL	185	61	126	30	.23	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1936-68, 1973-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	15	10	8.4	6.9	5.4	-----
3	16	12	9.5	8.0	6.5	-----
7	18	13	11	9.6	8.0	-----
14	21	16	14	12	9.9	-----
30	26	20	17	14	12	-----
60	31	24	21	18	16	-----
90	34	27	25	22	20	-----
120	38	31	29	27	25	-----
183	57	47	43	39	36	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1925-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
362	613	1180	1640	2640	3710	5090

WEIGHTED SKEW = 0.200

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1935-68, 1972-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	541	955	1400	2250	3190	-----
3	466	746	1020	1520	2030	-----
7	404	593	765	1050	1320	-----
15	353	480	580	726	850	-----
30	326	419	475	539	584	-----
60	296	375	414	455	480	-----
90	274	345	381	418	440	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1935-68, 1972-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
506	362	297	254	218	160	112	75	54	42	34	26	21	16	14	11	8.7

BEST DOCUMENT AVAILABLE

06089000 SUN RIVER NEAR VAUGHN, MT

LOCATION.--Lat 47°31'37", long 111°29'05", in NW¼SE¼SW¼ sec.33, T.21 N., R.2 E., Cascade County, Hydrologic Unit 10030104, on right bank 3.7 mi (6.0 km) downstream from Muddy Creek, 3.6 mi (5.8 km) southeast of Vaughn, and at mile 14.6 (23.5 km).

DRAINAGE AREA.--1,854 mi^2 (4,802 km^2).

PERIOD OF RECORD.--July to October 1897 (gage heights and discharge measurements only, published as "near Great Falls"), April 1934 to current year. Monthly discharge only for April 1934, published in WSP 1309.

REVISED RECORDS.--WSP 786: 1934. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,317.12 ft (1,011.058 m) National Geodetic Vertical Datum of 1929. July 11 to Oct. 30, 1897, nonrecording gage at site 0.8 mi (1.3 km) upstream at different datum. Apr. 19 to Aug. 3, 1934, nonrecording gage at present site and datum.

REMARKS.--Flow regulated by Gibson, Pishkun, Willow Creek, and Nilan Reservoirs. Diversions for irrigation of about 110,000 acres (455 km^2) above station.

AVERAGE DISCHARGE.--45 years, 734 ft^3/s (20.79 m^3/s), 531,800 acre-ft/yr (656 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 53,500 ft^3/s (1,520 m^3/s) June 9, 1964, 42,200 ft^3/s (1,200 m^3/s) in main channel, plus 11,300 ft^3/s (320 m^3/s) in bypass channel, gage height, 23.4 ft (7.13 m), from floodmark; minimum, 20 ft^3/s (0.57 m^3/s) Apr. 24, 1944.

MONTHLY AND ANNUAL MEAN DISCHARGES 1935-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	779	143	379	134	.35	4.3
NOVEMBER	772	149	330	126	.38	3.7
DECEMBER	730	114	297	127	.43	3.4
JANUARY	494	67	249	88	.35	2.8
FEBRUARY	501	82	260	98	.38	2.9
MARCH	868	133	334	176	.53	3.8
APRIL	2060	93	471	370	.78	5.3
MAY	4330	87	1660	1010	.61	18.8
JUNE	8010	280	2940	2090	.71	33.4
JULY	2510	265	859	548	.64	9.8
AUGUST	1030	250	582	185	.32	6.6
SEPTEMBER	796	164	442	136	.31	5.0
ANNUAL	1310	210	734	299	.41	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1936-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	131	82	61	47	34	27
3	136	88	67	52	38	30
7	148	97	76	61	47	39
14	160	110	89	74	60	52
30	187	130	105	88	71	61
60	221	159	130	110	89	77
90	238	175	147	127	106	94
120	255	189	160	139	118	105
183	292	220	188	164	141	126

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1934-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1330	3860	12200	17000	24500	31000	39000

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1935-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	5960	10800	14000	17800	20400	22700
3	5570	9740	12300	15000	16800	18300
7	4870	8110	9870	11600	12600	13400
15	4010	6590	7970	9350	10100	10800
30	3180	5260	6430	7640	8370	8970
60	2270	3670	4470	5320	5840	6270
90	1750	2770	3360	4020	4440	4800

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1935-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
6410	2940	1610	945	733	545	440	369	315	271	226	175	141	107	88	73	56

06090300 MISSOURI RIVER NEAR GREAT FALLS, MT

LOCATION.--Lat 47°34'55", long 111°03'35", in NE¼NW¼ sec.14, T.21 N., R.5 E., Cascade County, Hydrologic Unit 10030102, on left bank 100 ft (30 m) downstream from Morony Dam, 12.6 mi (20.3 km) northeast of Great Falls, and at mile 2,105.6 (3,387.9 km).

DRAINAGE AREA.--23,292 mi² (60,326 km²).

PERIOD OF RECORD.--May to July 1953 (in WSP 1320-B), October 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,809.21 ft (856.247 m) National Geodetic Vertical Datum of 1929. Prior to July 27, 1977, nonrecording gage at site 700 ft (213 m) downstream at same datum. October 1971 to July 27, 1977, discharges were obtained from the Montana Power Company at Rainbow Dam 7.05 mi (11.3 km) upstream. Prior to October 1971, Foxboro meters were used for determining discharge throught powerplant. Water-stage recorder on Morony Reservoir was used for determining head on taintor gates with datum of gage at National Geodetic Vertical Datum of 1929 (levels by Montana Power Company).

REMARKS.--Flow regulated by 18 smaller irrigation reservoirs and powerplants, Clark Canyon Reservoir, and Canyon Ferry Reservoir. Diversions for irrigation of about 750,400 acres (3,040 km²) above station.

AVERAGE DISCHARGE.--23 years, 7,946 ft³/s (225.0 m³/s), 5,757,000 acre-ft/yr (7.10 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 72,000 ft³/s (2,040 m³/s) June 10, 1964 (from hydrographic comparison with nearby stations); minimum, about 1.0 ft³/s (0.028 m³/s) Apr. 16, 1962, powerplant shutdown; minimum daily, 1,760 ft³/s (49.8 m³/s) Apr. 16, 1961. Flood of June 10, 1964, is the highest since 1908.

MONTHLY AND ANNUAL MEAN DISCHARGES 1957-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	11900	4040	6110	1720	.28	6.4
NOVEMBER	10400	4180	6530	1740	.27	6.8
DECEMBER	11500	4760	6490	1480	.23	6.8
JANUARY	8230	4740	6450	1040	.16	6.8
FEBRUARY	9050	4340	6690	1210	.18	7.0
MARCH	10800	4020	7050	1910	.27	7.4
APRIL	13200	3530	7920	2820	.36	8.3
MAY	24800	4450	12200	5230	.43	12.8
JUNE	30200	3760	15000	6950	.46	15.7
JULY	23600	3820	9210	4470	.49	9.7
AUGUST	9090	3950	6040	1400	.23	6.3
SEPTEMBER	8090	3110	5660	1410	.25	5.9
ANNUAL	11500	4680	7940	1790	.22	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1958-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	3000	2310	2000	1780	-----	-----
3	3730	3040	2720	2480	-----	-----
7	4330	3520	3120	2810	-----	-----
14	4560	3760	3380	3090	-----	-----
30	4850	4020	3630	3330	-----	-----
60	5180	4300	3890	3570	-----	-----
90	5370	4520	4130	3830	-----	-----
120	5540	4720	4350	4070	-----	-----
183	5930	5040	4630	4310	-----	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1957-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	21100	32500	40900	52400	-----	-----
3	20800	30800	37300	45400	-----	-----
7	19800	28200	33200	38800	-----	-----
15	18400	25900	30200	35100	-----	-----
30	16400	23000	26800	31300	-----	-----
60	14200	19200	22100	25400	-----	-----
90	12300	16600	19200	22200	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1957-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
26800	17800	13500	11000	9360	8050	7310	6640	6050	5540	5110	4450	3950	3490	3160	2790	2180

06090500 BELT CREEK NEAR MONARCH, MT

LOCATION.--Lat 47°12'27", long 110°55'53", in NW¼SE¼NW¼ sec.26, T.17 N., R.6 E., Cascade County, Hydrologic Unit 10030105, on left bank 0.4 mi (0.6 km) south of Riceville and 8.9 mi (14.3 km) northwest of Monarch.

DRAINAGE AREA.--368 mi² (953 km²).

PERIOD OF RECORD.--April 1951 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,962.25 ft (1,207.694 m) National Geodetic Vertical Datum of 1929 (levels by Army Corps of Engineers).

REMARKS.--No known regulation or diversion above station.

AVERAGE DISCHARGE.--28 years, 192 ft³/s (5.437 m³/s), 139,100 acre-ft/yr (172 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,000 ft³/s (312 m³/s) June 4, 1953, gage height, 10.12 ft (3.085 m), from rating curve extended above 4,100 ft³/s (116 m³/s) on basis of slope-area measurement of peak flow; no flow Feb. 21, Dec. 24, 1962, caused by ice jams upstream.

MONTHLY AND ANNUAL MEAN DISCHARGES 1952-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	264	29	69	49	.71	3.0
NOVEMBER	120	21	49	23	.47	2.1
DECEMBER	73	8.8	35	17	.48	1.5
JANUARY	53	4.7	29	13	.45	1.2
FEBRUARY	55	9.4	31	13	.42	1.4
MARCH	106	6.7	37	21	.56	1.6
APRIL	385	30	128	92	.72	5.6
MAY	1570	226	695	330	.47	30.3
JUNE	2210	189	826	551	.67	36
JULY	576	50	228	133	.59	9.9
AUGUST	174	24	92	41	.44	4.0
SEPTEMBER	221	28	75	45	.60	3.3
ANNUAL	345	62	191	85	.44	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1953-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	13	5.3	2.9	1.7	.83	-----
3	14	6.8	4.3	2.9	1.8	-----
7	17	8.6	5.7	3.9	2.5	-----
14	20	10	6.7	4.5	2.8	-----
30	23	13	8.6	6.1	4.0	-----
60	26	16	12	9.5	7.1	-----
90	27	18	14	12	9.3	-----
120	29	19	16	13	10	-----
183	36	25	21	18	15	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1952-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
953	1530	2530	3340	4530	5540	6700

WEIGHTED SKEW = 0.362

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1952-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1440	2560	3630	5480	7310	-----
3	1360	2290	3100	4410	5620	-----
7	1220	1960	2560	3470	4260	-----
15	1070	1670	2140	2810	3380	-----
30	917	1440	1840	2400	2860	-----
60	698	1080	1350	1700	1970	-----
90	543	829	1020	1260	1440	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1952-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1890	902	529	337	218	116	77	59	47	38	30	21	16	10	6.6	4.2	2.9

06090800 MISSOURI RIVER AT FORT BENTON, MT

LOCATION.--Lat 47°49'03", long 110°39'59", in SE¼SE¼ sec.23, T.24 N., R.8 E., Chouteau County, Hydrologic Unit 10030102, on left bank at downstream side of abandoned highway bridge at Fort Benton, 3.8 mi (6.1 km) upstream from Shonkin Creek, and at mile 2,073.2 (3,335.8 km).

DRAINAGE AREA.--24,749 mi² (64,100 km²).

PERIOD OF RECORD.--October 1890 to current year. Records for June 1881 to September 1890, published in WSP 546 and 761, have been found to be unreliable and should not be used.

REVISED RECORDS.--WSP 746: 1932. WSP 1146: 1891-1907, 1908(M), 1909-18, 1937-38. WSP 1209: 1948(P). WSP 1309: 1929(M). WSP 1629: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 2,614.05 ft (796.762 m) National Geodetic Vertical Datum of 1929. Prior to Oct. 11, 1920, nonrecording gages, and Oct. 11, 1920, to Apr. 25, 1924, water-stage recorder, all at present site at datum 1.00 ft (0.305 m) higher.

REMARKS.--Flow regulated by 18 smaller irrigation reservoirs and powerplants, Clark Canyon Reservoir, and Canyon Ferry Reservoir. Diversions for irrigation of about 75,400 acres (3,040 km²) above station. Extreme diurnal fluctuation caused by powerplant at Morony Dam.

AVERAGE DISCHARGE.--89 years, 7,780 ft³/s (220.3 m³/s), 5,637,000 acre-ft/yr (6.95 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, about 140,000 ft³/s (3,960 m³/s) June 6, 1908, gage height, 18.5 ft (5.64 m), present datum, from rating curve extended above 63,000 ft³/s (1,780 m³/s); minimum, 320 ft³/s (9.06 m³/s) July 5, 1936, gage height, -0.50 ft (-0.15 m); minimum daily, 627 ft³/s (17.8 m³/s) July 5, 1936.

MONTHLY AND ANNUAL MEAN DISCHARGES 1891-1979

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	12600	2440	5250	1590	.30	5.6
NOVEMBER	10900	2790	5410	1490	.27	5.8
DECEMBER	11600	2450	5040	1420	.28	5.4
JANUARY	8200	2380	4780	1440	.30	5.1
FEBRUARY	8780	2490	5100	1520	.30	5.5
MARCH	11800	2990	6200	1790	.29	6.6
APRIL	15500	3570	8390	2840	.34	9.0
MAY	28600	4140	14500	5820	.40	15.5
JUNE	53600	4060	19800	10400	.53	21.2
JULY	26600	2430	9360	5310	.57	10
AUGUST	9230	1580	4890	1640	.34	5.2
SEPTEMBER	8430	1890	4690	1430	.30	5.0
ANNUAL	11900	3620	7780	2030	.26	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1891-1979

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
169000	24900	38600	49800	62300	80200	96000

WEIGHTED SKEW = 0.030

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1892-1979

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	2840	2010	1610	1300	995	819
3	3180	2420	2050	1770	1470	1300
7	3440	2620	2230	1940	1630	1450
14	3620	2760	2350	2040	1730	1540
30	3750	2900	2510	2220	1910	1730
60	4010	3140	2750	2460	2160	1970
90	4260	3390	2990	2690	2380	2190
120	4500	3600	3180	2870	2540	2330
183	4750	3810	3370	3050	2710	2500

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1891-1979

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	26100	39900	49400	61900	71500	81200
3	25600	38800	47500	58500	66600	74600
7	24900	36800	44200	52700	58600	64100
15	23200	34000	40500	47900	52900	57400
30	20700	30500	36400	43100	47800	52000
60	17400	24700	29000	33900	37200	40200
90	14700	20500	23900	27800	30500	32900

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1891-1979

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
35200	22000	15400	11700	9410	7390	6340	5580	5080	4580	4000	3470	2990	2560	2280	1990	1480

06092000 TWO MEDICINE RIVER NEAR BROWNING, MT

LOCATION.--Lat 48°28'25", long 112°48'06", in NW¼SW¼SE¼ sec.5, T.31 N., R.9 W., Glacier County, Hydrologic Unit 10030201, on right bank 1,000 ft (305 m) upstream from bridge on U.S. Highway 89, 11 mi (18 km) southeast of Browning, and 15 mi (24 km) upstream from Badger Creek.

DRAINAGE AREA.--317 mi² (821 km²).

PERIOD OF RECORD.--April 1907 to October 1924, May 1951 to September 1977. Monthly discharge only for some periods, published in WSP 1309. Published as Two Medicine River at Family 1907-24. October 1957 to September 1964, published as Two Medicine Creek near Browning.

REVISED RECORDS.--WSP 1309: 1908, 1910, 1913, 1916, 1918. WSP 1559: 1915(M), 1917-18(M), 1921-24. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 3,930 ft (1,198 m), from topographic map. Prior to Nov. 1, 1924, nonrecording gage at several sites within 3 mi (5 km) of present site at various datums. May 1, 1951, to Sept. 30, 1964, and Oct. 1, 1964, to Sept. 27, 1967, water-stage recorder at site 150 ft (45.7 m) downstream at datums 2.00 ft (0.610 m) higher and present datum, respectively.

REMARKS.--Flow regulated by Lower Two Medicine Lake. Diversions above station into Two Medicine Canal for irrigation of about 10,000 acres (40.5 km²) below station.

AVERAGE DISCHARGE.--43 years, 378 ft³/s (10.70 m³/s), 273,900 acre-ft/yr (338 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 100,000 ft³/s (2,830 m³/s) June 8, 1964, gage height, 15.5 ft (4.72 m) from floodmark in gage well, 16.0 ft (4.88 m) from outside flood mark, present datum; minimum, 1.1 ft³/s (0.031 m³/s) Aug. 16, 1966.

MONTHLY AND ANNUAL MEAN DISCHARGES 1908-24, 1952-77

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	474	2.4	132	100	.76	2.9
NOVEMBER	332	24	114	70	.61	2.5
DECEMBER	378	21	91	64	.70	2.0
JANUARY	440	30	85	67	.79	1.9
FEBRUARY	280	34	90	51	.57	2.0
MARCH	592	27	134	113	.84	3.0
APRIL	940	109	480	233	.48	10.6
MAY	2240	286	1380	416	.30	30.6
JUNE	4820	91	1470	928	.63	32.6
JULY	1130	20	355	240	.68	7.9
AUGUST	283	5.4	86	68	.80	1.9
SEPTEMBER	596	3.4	94	101	1.08	2.1
ANNUAL	625	71	377	113	.30	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1908-24, 1953-77

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	15	5.2	2.9	1.8	1.0	.67
3	16	5.6	3.2	1.9	1.1	.72
7	19	6.9	3.9	2.4	1.3	.88
14	25	9.7	5.5	3.3	1.8	1.1
30	35	16	9.3	5.6	3.0	1.9
60	46	23	15	9.1	5.0	3.2
90	59	33	22	14	8.1	5.3
120	69	41	29	20	12	8.5
183	79	51	40	33	26	22

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1907-77

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1740	3620	5270	6790	10300	16100	27900

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1908-24, 1952-77

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	2610	5010	7490	14000	21400	32500
3	2430	4360	6360	10100	14100	19400
7	2250	3650	4760	6480	7950	9610
15	2010	3030	3740	4670	5370	6100
30	1900	2590	3040	3540	3860	4150
60	1510	1990	2190	2360	2440	2490
90	1230	1550	1650	1720	1750	1760

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1908-24, 1952-77

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
3140	1700	1170	794	536	252	159	114	87	68	52	35	22	8.6	4.6	3.2	2.0

06092500 BADGER CREEK NEAR BROWNING, MT

LOCATION.--Lat 48°21'03", long 112°50'27", in NE¼ sec. 24, T.30 N., R.10 W., Glacier County, Hydrologic Unit 10030201, on right bank just upstream from point of diversion to Four Horns Canal, 15 mi (24 km) upstream from mouth and 17 mi (27 km) southeast of Browning.

DRAINAGE.--133 mi² (344 km²).

PERIOD OF RECORD.--May 1951 to September 1973.

REVISED RECORDS.--WSP 1729: 1951(M).

GAGE.--Water-stage recorder and control consisting of concrete diversion dam and two taintor gates (regularly closed). Datum of gage is 4,179.26 ft (1,273.838 m) National Geodetic Vertical Datum of 1929 (Water and Power Resources Service bench mark).

REMARKS.--Water diverted into Four Horns Canal at station for irrigation of about 6,000 acres (24.3 km²) below station. Figures of discharge given herein are sum of flow over diversion dam and that diverted by Four Horns Canal.

AVERAGE DISCHARGE.--22 years, 229 ft³/s (6.485 m³/s), 23.38 in/yr (594 mm/yr), 165,900 acre ft/yr (205 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,700 ft³/s (1,410 m³/s) June 8, 1964; gage height, 10.37 ft (3.161 m), from rating curve extended above 2,000 ft (56.6 m³/s) on basis of slope-area measurement of peak flow; minimum daily, 25 ft³/s (0.71 m³/s) Dec. 11-15, 1963.

MONTHLY AND ANNUAL MEAN DISCHARGES 1952-73

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	207	91	132	32	.24	4.8
NOVEMBER	156	79	112	21	.19	4.1
DECEMBER	139	57	95	22	.23	3.5
JANUARY	125	55	83	17	.21	3.0
FEBRUARY	194	63	92	23	.25	3.4
MARCH	178	58	96	26	.27	3.5
APRIL	303	78	179	71	.40	6.5
MAY	915	466	651	129	.20	23.8
JUNE	1740	318	751	352	.47	27.4
JULY	400	139	271	80	.30	9.9
AUGUST	212	94	154	28	.18	5.6
SEPTEMBER	169	101	125	20	.16	4.6
ANNUAL	297	159	229	38	.17	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1951-73

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
882	1640	2490	3150	4640	7670	12900

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1953-73

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	49	37	32	28	-----	-----
3	51	39	33	29	-----	-----
7	55	42	36	31	-----	-----
14	60	47	41	37	-----	-----
30	70	57	50	45	-----	-----
60	78	68	63	59	-----	-----
90	84	74	68	64	-----	-----
120	89	78	72	67	-----	-----
183	99	87	81	77	-----	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1952-73

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1230	2240	3600	6840	-----	-----
3	1170	1920	2730	4270	-----	-----
7	1060	1570	2030	2790	-----	-----
15	978	1370	1680	2130	-----	-----
30	864	1160	1370	1660	-----	-----
60	687	883	1010	1160	-----	-----
90	553	696	786	896	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1952-73

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1340	815	562	386	274	182	145	125	112	102	89	76	65	52	44	41	31

06094500 BIRCH CREEK AT SWIFT DAM, NEAR DUPUYER, MT

LOCATION.--Lat 48°10'00", long 112°52'10", near southwest corner of sec. 23, T.28 N., R.10 W., Pondera County, Hydrologic Unit 10030201, about 600 ft (183 m) downstream from Swift Dam and 17 mi (27 km) west of Dupuyer.

DRAINAGE AREA.--75.3 mi² (194.2 km²), approximately.

PERIOD OF RECORD.--April 1913 to September 1929.

REVISED RECORDS.--WSP 1309: 1919, 1928-29.

GAGE.--Nonrecording gage. Elevation of gage is 4,790 ft (1,460 m), from topographic map. Prior to July 10, 1915, nonrecording gages at several sites within 700 ft (213 m) at different datums. Wire-weight gage and after 1920 staff gage at spillway for bypass overflow from reservoir.

REMARKS.--Two small diversions for irrigation above station. Flow regulated by Swift Dam. Discharge records established herein include bypass spillway flow.

COOPERATION.--Record furnished by Valier-Montana Land and Water Co.

AVERAGE DISCHARGE.--16 years (1913-29), 148 ft³/s (4.191 m³/s), 107,200 acre-ft/yr (132 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 5,275 ft³/s (149 m³/s) June 21, 1916, gage height, 3.45 ft (1.052 m); 12.94 ft (3.944 m) on spillway; no flow part of Jan. 2, 3, 1920.

MONTHLY AND ANNUAL MEAN DISCHARGES 1914-29

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	337	2.7	84	96	1.14	4.8
NOVEMBER	415	3.0	69	108	1.56	4.0
DECEMBER	112	2.5	26	35	1.33	1.5
JANUARY	129	2.5	25	37	1.5	1.4
FEBRUARY	152	1.0	19	37	2.0	1.1
MARCH	282	1.0	28	69	2.47	1.6
APRIL	143	2.4	57	56	.98	3.3
MAY	534	15	285	138	.48	16.4
JUNE	1150	17	470	293	.62	27
JULY	549	63	328	146	.45	18.0
AUGUST	383	50	227	114	.50	13.1
SEPTEMBER	280	16	123	70	.57	7.1
ANNUAL	279	57	146	59	.40	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW= --

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1914-29

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	1.4	.77	.63	.56	-----	-----
3	1.9	1.1	.98	.90	-----	-----
7	2.1	1.2	1.0	.91	-----	-----
14	2.2	1.3	1.1	.95	-----	-----
30	3.3	2.0	1.6	1.5	-----	-----
60	5.5	2.6	1.8	1.4	-----	-----
90	6.7	3.1	2.2	1.8	-----	-----
120	8.3	3.6	2.5	1.9	-----	-----
183	22	7.8	4.5	2.8	-----	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1914-29

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	695	1200	1770	2890	-----	-----
3	687	1120	1540	2270	-----	-----
7	646	992	1290	1760	-----	-----
15	576	852	1060	1410	-----	-----
30	496	717	892	1150	-----	-----
60	424	571	669	792	-----	-----
90	374	497	571	658	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1914-29

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
927	535	424	353	300	189	94	58	11	7.2	4.7	3.0	2.0	1.2	1.1	1.1	1.0

BEST DOCUMENT AVAILABLE

06095000 BIRCH CREEK NEAR DUPUYER, MT

LOCATION.--Lat 48°15', long 112°39', near center of sec.28, T.29 N., R.8 W., Pondera County, Hydrologic Unit 10030201, 0.5 mi (0.8 km) upstream from B canal headgates and 8 mi (13 km) northwest of Dupuyer.

DRAINAGE AREA.--105 mi² (272 km²), approximately.

PERIOD OF RECORD.--August 1907 to September 1937.

REVISED RECORDS.--WSP 1309: 1909, 1912, 1914(M), 1917, 1918.

GAGE.--Nonrecording gage. Altitude of gage is 4,180 ft (1,274 km), from topographic map. Prior to June 29, 1927, nonrecording gages at several sites within 0.5 mi (0.8 km) described site at different datums.

REMARKS.--Several small diversions for irrigation above station. Flow regulated by Swift Dam since 1913.

COOPERATION.--Records furnished by Valier-Montana Land and Water Co.

AVERAGE DISCHARGE.--30 years (1907-37), 159 ft³/s (4.503 m³/s), 115,200 acre ft/yr (142 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge not determined, occurred about June 6, 1908; minimum observed, 3 ft³/s (0.085 m³/s) Apr. 7, 1921, and Apr. 4-6, 8, 9, 1937, but may have been less during periods of ice effect.

MONTHLY AND ANNUAL MEAN DISCHARGES 1909-37

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	366	13	93	77	.83	5.0
NOVEMBER	492	6.0	68	97	1.43	3.7
DECEMBER	118	6.9	37	38	1.03	2.0
JANUARY	140	6.0	32	35	1.12	1.7
FEBRUARY	212	4.0	36	50	1.37	2.0
MARCH	310	5.7	41	61	1.49	2.2
APRIL	340	7.8	95	81	.85	5.1
MAY	607	61	321	139	.43	17.4
JUNE	1360	101	463	278	.60	25.1
JULY	707	72	332	147	.44	16
AUGUST	418	45	215	119	.55	11.7
SEPTEMBER	308	26	110	74	.67	6.0
ANNUAL	315	46	154	59	.38	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1910-37

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	8.2	4.0	3.0	2.4	2.0	-----
3	8.6	4.4	3.4	2.9	2.5	-----
7	9.0	4.7	3.7	3.1	2.7	-----
14	9.3	4.9	3.9	3.3	2.9	-----
30	9.9	5.4	4.2	3.6	3.1	-----
60	12	6.3	4.8	4.0	3.3	-----
90	14	6.9	5.1	4.1	3.3	-----
120	16	7.9	5.7	4.5	3.6	-----
183	33	16	11	8.1	5.8	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1909-37

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	738	1380	2100	3550	5190	-----
3	711	1220	1730	2640	3570	-----
7	652	1040	1380	1920	2420	-----
15	579	880	1120	1470	1770	-----
30	501	727	895	1130	1320	-----
60	426	594	705	846	951	-----
90	376	514	595	689	754	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1909-37

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
849	534	418	345	281	176	111	82	46	21	11	8.2	6.6	5.9	4.6	4.1	3.7

06099000 CUT BANK CREEK AT CUT BANK, MT

LOCATION.--Lat 48°38'00", long 112°20'40", in SW¼SE¼NE¼ sec.11, T.33 N., R.6 W., Glacier County, Hydrologic Unit 10030202, on right bank at highway bridge 0.7 mi (1.1 km) west of Cut Bank and 17 mi (27 km) upstream from confluence with Two Medicine River.

DRAINAGE AREA.--1,065 mi² (2,758 km²).

PERIOD OF RECORD.--August 1905 to October 1919, May to July 1920, May 1922 to October 1924, May 1951 to September 1973. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1907-08, 1910-11, 1924-25. WSP 1509: 1911, 1916(M). WSP 1559: 1905(M), 1908(M). WSP 1709: 1959. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 3,550 ft (1,082 m), from topographic map. Prior to May 12, 1922, nonrecording gages at several sites 0.5 mi (0.8 km) upstream at various datums. May 12, 1922, to Nov. 1, 1924, nonrecording gage at present site at different datum.

REMARKS.--Few minor diversions for irrigation of hay meadows above station. Natural flow of stream affected by water from Two Medicine Canal which irrigates land above station.

AVERAGE DISCHARGE.--38 years (1905-19, 1922-24, 1951-73), 196 ft³/s (5.551 m³/s), 142,000 acre-ft/yr (175 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,600 ft³/s (470 m³/s) June 9, 1964, gage height, 13.93 ft (4.246 m), 14.2 ft (4.33 m) from floodmarks, from rating curve extended above 12,000 ft³/s (340 m³/s) on basis of slope-area measurement of peak flow; minimum observed, 4.0 ft³/s (0.11 m³/s) Dec. 1, 1905, gage height, 2.4 ft (0.73 m), site and datum then in use.

MONTHLY AND ANNUAL MEAN DISCHARGES 1906-19, 1923-24, 1952-73

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	268	30	91	50	.55	3.9
NOVEMBER	141	28	74	29	.40	3.1
DECEMBER	125	16	45	24	.53	1.9
JANUARY	90	10	34	19	.55	1.5
FEBRUARY	150	16	50	36	.72	2.1
MARCH	1050	6.9	158	184	1.17	6.7
APRIL	664	93	264	155	.59	11.2
MAY	894	279	521	164	.31	22.1
JUNE	1630	208	681	318	.47	28.9
JULY	536	75	258	125	.48	11
AUGUST	233	31	98	49	.50	4.2
SEPTEMBER	298	17	78	55	.70	3.3
ANNUAL	317	110	196	56	.28	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1907-19, 1924, 1953-73

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	15	8.6	6.5	5.2	4.1	-----
3	15	9.6	7.6	6.3	5.1	-----
7	17	11	8.5	7.0	5.7	-----
14	19	13	10	8.7	7.2	-----
30	23	15	13	11	8.8	-----
60	28	20	18	16	14	-----
90	33	24	21	19	17	-----
120	39	29	25	23	20	-----
183	56	42	36	31	25	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1906-19, 1923-24, 1952-73

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1410	2620	3840	6080	8420	-----
3	1200	2050	2850	4250	5630	-----
7	1010	1600	2120	2950	3730	-----
15	854	1270	1560	2040	2420	-----
30	732	1020	1210	1450	1630	-----
60	600	800	926	1080	1190	-----
90	500	666	770	895	984	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1906-19, 1923-24, 1952-73

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1200	744	536	403	306	181	119	87	65	51	36	26	21	15	11	9.3	6.4

BEST DOCUMENT AVAILABLE

06099500 MARIAS RIVER NEAR SHELBY, MT

LOCATION.--Lat 48°25'38", long 111°53'20", in E½NW¼SE¼ sec.20, T.31 N., R.2 W., Toole County, Hydrologic Unit 10030203, on left bank 20 ft (6 m) downstream from bridge on old U.S. Highway 91, 5.1 mi (8.2 km) south of Shelby, 24 mi (39 km) downstream from Cut Bank Creek, and at mile 168 (270 km).

DRAINAGE AREA.--3,242 mi² (8,397 km²), of which 518 mi² (1,342 km²) is probably noncontributing.

PERIOD OF RECORD.--April 1902 to December 1904, May 1905 to December 1906, May 1907 to January 1908, April 1911 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1903-4, 1918, 1921, 1933, 1935, 1947. WSP 1509: 1902, 1912(M), 1916, 1943(M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,087.72 ft (941.137 m) National Geodetic Vertical Datum of 1929. Prior to Dec. 23, 1947, nonrecording gage or water-stage recorder at several sites within 1,000 ft (305 m) of present site at approximately the same datum. Dec. 23, 1947 to Apr. 6, 1976, water-stage recorder at site 150 ft (46 m) downstream at same datum.

REMARKS.--Some regulation by Lower Two Medicine Lake, Four Horns Reservoir, Swift Reservoir and Lake Frances, having a combined capacity of 172,630 acre-ft (213 hm³). Diversion for irrigation of about 50,000 acres (202 km²) above station and about 15,000 acres (60.7 km²) below.

AVERAGE DISCHARGE.--71 years, (1902-4, 1905-6, 1911-79), 952 ft³/s (26.96 m³/s), 689,700 acre-ft/yr (850 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 241,000 ft³/s (6,830 m³/s) June 9, 1964, largely due to failure of Swift Dam, gage height, 23.64 ft (7.205 m), from floodmark, from rating curve extended above 34,000 ft³/s (963 m³/s) on basis of slope-area measurement of peak flow; maximum unaffected by dam failure, 75,700 ft³/s (2,140 m³/s) June 20, 1975, gage height, 18.21 ft (5.550 m); minimum observed, 10 ft³/s (0.28 m³/s) Aug. 20, 1919.

MONTHLY AND ANNUAL MEAN DISCHARGES 1903-04, 1906, 1912-22, 1924-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	1450	101	427	251	.59	3.7
NOVEMBER	1400	132	385	212	.55	3.4
DECEMBER	863	103	300	150	.50	2.6
JANUARY	700	42	254	132	.52	2.2
FEBRUARY	900	59	309	191	.62	2.7
MARCH	2300	146	600	437	.73	5.2
APRIL	3150	280	1210	604	.50	10.5
MAY	5300	711	2850	1070	.38	25
JUNE	10200	409	3280	2190	.67	28.7
JULY	3430	147	1070	734	.68	9.4
AUGUST	1100	79	397	236	.60	3.5
SEPTEMBER	1450	86	355	229	.64	3.1
ANNUAL	1930	302	954	367	.38	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1903-04, 1912-22, 1925-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	129	74	52	37	25	18
3	130	79	59	45	33	26
7	141	87	65	51	37	30
14	155	98	74	57	42	34
30	175	114	88	70	52	43
60	197	138	113	96	79	69
90	223	159	133	114	96	85
120	247	178	150	129	110	99
183	294	203	166	140	116	101

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1903-04, 1906, 1912-22, 1924-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	4930	9540	15000	26500	40100	60300
3	4830	6790	12800	20200	27800	37800
7	4530	7610	10200	14200	17800	21900
15	4110	6470	8140	10300	12000	13700
30	3610	5490	6700	8190	9250	10300
60	2990	4380	5210	6150	6780	7350
90	2450	3540	4170	4870	5330	5740

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1903-04, 1906, 1912-22, 1924-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
6530	3750	2560	1630	1390	795	552	419	333	270	219	165	132	101	81	63	30

BEST DOCUMENT AVAILABLE

06101500 MARIAS RIVER NEAR CHESTER, MT

LOCATION.--Lat 48°18'21", long 111°04'44", in SW¼SW¼ sec.34, T.30 N., R.5 E., Liberty County, Hydrologic Unit 10030203, on left bank 2.0 mi (3.2 km) downstream from Tiber Dam, 4.3 mi (6.9 km) upstream from Pondera Coulee, and 15 mi (24 m) southwest of Chester.

DRAINAGE AREA.--4,927 mi² (12,761 km²), of which 518 mi² (1,342 km²) is probably noncontributing.

PERIOD OF RECORD.--April to September 1921, October 1945 to September 1947, October 1955 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1629: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,814.03 ft (857.716 m) National Geodetic Vertical Datum of 1929 (Water and Power Resources Service bench mark). Prior to Oct. 1, 1921, nonrecording gage at bridge 2.5 mi (4.0 km) downstream at different datum. Oct. 4, 1945, to Sept. 30, 1946, nonrecording gage at site 3 mi (5 km) downstream at different datum.

REMARKS.--Flow completely regulated by Lake Elwell since Oct. 28, 1955.

AVERAGE DISCHARGE.--26 years (1945-47, 1955-79), 916 ft³/s (25.94 m³/s), 663,600 acre-ft/yr (818 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge not determined, occurred about Mar. 20, 1947; minimum, probably less than 0.2 ft³/s (0.006 m³/s) during period of no gage-height record Oct. 29 to Nov. 10, 1955, when gates at dam were closed.

MONTHLY AND ANNUAL MEAN DISCHARGES 1946-47, 1956-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	2760	218	803	533	.66	7.3
NOVEMBER	1490	.40	627	406	.65	5.7
DECEMBER	989	16	384	214	.56	3.5
JANUARY	803	35	307	161	.53	2.8
FEBRUARY	894	35	382	236	.62	3.5
MARCH	2400	48	622	502	.81	5.7
APRIL	2280	46	976	604	.62	8.9
MAY	3540	51	1550	754	.49	14.1
JUNE	6250	59	1980	1290	.65	18
JULY	5330	58	1330	1070	.81	12.2
AUGUST	2910	83	1030	809	.78	9.4
SEPTEMBER	3060	191	980	611	.62	8.9
ANNUAL	1490	98	916	343	.38	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1947, 1957-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	187	91	54	32	17	-----
3	207	99	57	34	17	-----
7	214	107	66	42	24	-----
14	213	117	82	59	40	-----
30	242	137	96	70	47	-----
60	279	155	108	79	53	-----
90	317	179	125	90	60	-----
120	345	192	133	95	63	-----
183	477	286	210	159	114	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1946-47, 1956-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	2680	4250	5420	7050	8370	-----
3	2640	4190	5360	6980	8300	-----
7	2550	4090	5230	6810	8070	-----
15	2460	3930	4980	6340	7390	-----
30	2320	3570	4310	5160	5720	-----
60	2120	2960	3290	3550	3660	-----
90	1910	2640	2890	3060	3170	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1946-47, 1956-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
4470	2640	1950	1670	1430	1160	906	624	454	352	254	167	110	48	32	1.3	.27

06102000 MARIAS RIVER NEAR BRINKMAN, MT

LOCATION.--Lat 48°16', long 110°42', in SE¼SE¼ sec.17, T.29 N., R.8 E., Hill County, Hydrologic Unit 10030203, on left bank 4 mi (6 km) southwest of Brinkman Post Office, 14 mi (23 km) downstream from Cottonwood Creek, and 30 mi (48 km) north of Fort Benton.

DRAINAGE AREA.--6,425 mi^2 (16,641 km^2) , of which 518 mi^2 (1,342 km^2) is probably noncontributing.

PERIOD OF RECORD.--October 1921 to September 1956.

REVISED RECORDS.--WSP 1309: 1922-31.

GAGE.--Water-stage recorder. Datum of gage is 2,677.25 ft (816.026 m) National Geodetic Vertical Datum, adjustment of 1912. Prior to Oct. 6. 1931, cantilever gage at site 2,800 ft (850 m) downstream at datum 0.64 ft (0.195 m) higher. Oct. 6, 1931, to July 1, 1939, water-stage recorder at site 1,600 ft (490 m) downstream at present datum.

REMARKS.--Diversions for irrigation of about 65,000 acres (263 km^2) above station. Flow regulated by Lake Elwell since Oct. 28, 1955, and four other reservoirs having a combined capacity of 177,870 acre-ft (219 hm^3).

AVERAGE DISCHARGE.--34 years (1921-55), 952 ft^3/s (26.96 m^3/s) 689,200 acre-ft/yr (850 hm^3/yr), prior to operation of Lake Elwell.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,700 ft^3/s (1,440 m^3/s) June 19, 1948, gage height, 21.0 ft (6.40 m), from floodmark; minimum daily, 1 ft^3/s (0.028 m^3/s) Dec. 17, 18, 1955.

MONTHLY AND ANNUAL MEAN DISCHARGES 1922-56

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	1470	85	412	287	.70	3.7
NOVEMBER	1600	9.6	394	303	.77	3.5
DECEMBER	803	15	296	172	.58	2.7
JANUARY	700	32	226	133	.59	2.0
FEBRUARY	1000	39	299	241	.80	2.7
MARCH	2400	134	613	498	.81	5.5
APRIL	3210	86	1230	758	.62	11
MAY	5370	48	2610	1180	.45	23.4
JUNE	11400	64	3170	2520	.80	28.5
JULY	3460	52	1140	852	.75	10.3
AUGUST	1110	84	391	277	.71	3.5
SEPTEMBER	1370	87	348	264	.76	3.1
ANNUAL	1990	109	928	463	.50	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1923-56

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	135	57	27	12	4.0	-----
3	139	61	29	14	4.8	-----
7	142	64	33	16	6.3	-----
14	149	71	39	21	9.1	-----
30	171	80	48	26	11	-----
60	196	109	69	44	24	-----
90	221	128	80	58	35	-----
120	253	144	98	67	41	-----
183	267	169	133	109	86	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1908-56

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1922-56

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	4890	9840	14700	23400	32000	-----
3	4670	9010	13000	19500	25500	-----
7	4320	7890	10800	15100	18700	-----
15	3840	6590	8530	11000	12900	-----
30	3370	5560	6930	8520	9590	-----
60	2940	4550	5330	6040	6410	-----
90	2470	3750	4310	4790	5020	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1922-56

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
6590	3650	2090	1800	1360	788	515	341	300	241	187	125	84	49	35	23	4.9

BEST DOCUMENT AVAILABLE

06102050 MARIAS RIVER NEAR LOMA, MT

LOCATION.--47°56'47", long 110°34'47", in SE¼SW¼ sec.4, T.25 N., R.9 E., Chouteau County, Hydrologic Unit 10030203, on left bank 3.7 mi (6.0 km) northwest of Loma and 7.7 mi (12.4 km) upstream from mouth.

DRAINAGE AREA.--6,995 mi^2 (18,117 km^2), of which 518 mi^2 (1,342 km^2) is probably noncontributing.

PERIOD OF RECORD.--October 1959 to September 1972.

GAGE.--Water-stage recorder. Altitude of gage is 2,570 ft (783 m), from topographic map. Prior to May 4, 1960, nonrecording gage at same site and datum.

REMARKS.--Flow regulated by Lake Elwell.

AVERAGE DISCHARGE.--13 years (1959-72), 977 ft^3/s (27.67 m^3/s), 707,800 acre-ft/yr (873 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft^3/s (306 m^3/s) June 16, 1964, gage height, 4.23 ft (1.289 m); minimum daily, 90 ft^3/s (2.55 m^3/s) Oct. 21-25, 1959.

MONTHLY AND ANNUAL MEAN DISCHARGES 1960-72

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	2750	292	942	607	.65	8.0
NOVEMBER	1580	79	723	450	.62	6.2
DECEMBER	908	107	402	207	.51	3.4
JANUARY	517	105	298	126	.42	2.5
FEBRUARY	910	110	434	245	.56	3.7
MARCH	1290	117	568	367	.65	4.8
APRIL	2180	180	925	541	.58	7.9
MAY	2180	913	1390	380	.27	11.9
JUNE	6020	693	2200	1400	.63	18.8
JULY	2620	250	1360	711	.52	11.6
AUGUST	3040	137	1290	917	.71	11
SEPTEMBER	3260	436	1180	742	.63	10.1
ANNUAL	1330	522	977	281	.29	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1961-72

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	142	88	66	51	-----	-----
3	157	93	69	53	-----	-----
7	189	109	77	56	-----	-----
14	219	122	84	59	-----	-----
30	245	136	94	67	-----	-----
60	272	154	110	81	-----	-----
90	327	193	140	105	-----	-----
120	356	210	154	116	-----	-----
183	536	334	250	193	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1960-72

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	2850	4540	6050	8540	-----	-----
3	2750	4470	6000	8490	-----	-----
7	2620	4290	5800	8290	-----	-----
15	2460	4010	5390	7610	-----	-----
30	2230	3530	4630	6340	-----	-----
60	1930	2750	3390	4290	-----	-----
90	1730	2460	3000	3740	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1960-72

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
4310	2650	1960	1610	1440	1230	1020	815	504	402	300	185	119	96	83	76	48

06103000 TETON RIVER AT STRABANE, MT

LOCATION.--Lat 47°53', long 112°28', in SE¼NE¼ sec.35, T.25 N., R.7 W., Teton County, Hydrologic Unit 10030205, at bridge at Strabane, 8 mi (13 km) downstream from mouth of South Fork Teton River, and 14 mi (23 km) west of Choteau.

DRAINAGE AREA.--128 mi² (332 km²), approximately.

PERIOD OF RECORD.--June 1908 to September 1925. Prior to 1910, published as "near Belleview."

REVISED RECORDS.--WSP 1309: 1919(M), 1923.

GAGE.--Nonrecording gage. Altitude of gage is 4,440 ft (1,353 m), by barometer. Prior to May 9, 1906, nonrecording gages at 2 different sites about 1 mi (2 km) downstream at different datums. May 9, 1906, to Mar. 23, 1911, nonrecording gages at site about 0.5 mi (0.8 km) upstream at different datum.

REMARKS.--Several small diversions for irrigation above station. Starting in 1918 canal diverted floodwaters above station for storage in Bynum Reservoir for irrigation.

AVERAGE DISCHARGE.--9 years (1908-17), 151 ft³/s (4.276 m³/s), 109,400 acre-ft/yr (135 hm³/yr); 7 years (1917-24), 68.8 ft³/s (1.948 m³/s), 49,850 acre-ft/yr (61.5 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 3,810 ft³/s (108 m³/s) June 21, 1916, gage height, 7.8 ft (2.38 m), from rating curve extended above 1,700 ft³/s (48.1 m³/s); no flow at times in 1920-21.

MONTHLY AND ANNUAL MEAN DISCHARGES 1909-24

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	114	31	75	25	.33	5.5
NOVEMBER	100	6.6	59	28	.48	4.3
DECEMBER	128	.90	45	34	.76	3.2
JANUARY	105	6.7	37	31	.82	2.7
FEBRUARY	63	1.0	32	18	.55	2.3
MARCH	72	5.3	30	19	.63	2.2
APRIL	176	7.5	48	40	.84	3.5
MAY	719	93	248	161	.65	18
JUNE	966	76	395	271	.69	28.6
JULY	769	38	211	179	.85	15.3
AUGUST	280	27	113	66	.58	8.2
SEPTEMBER	150	29	85	34	.40	6.2
ANNUAL	225	35	115	57	.50	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1910-24

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	13	4.6	0.00	0.00	-----	-----
3	14	5.4	2.3	.30	-----	-----
7	15	5.5	2.4	.40	-----	-----
14	16	6.4	2.7	.80	-----	-----
30	22	7.1	2.9	1.2	-----	-----
60	27	10	4.6	2.3	-----	-----
90	28	13	8.1	5.2	-----	-----
120	31	14	7.9	4.8	-----	-----
183	41	25	18	14	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1908-18, 1964

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
920	1430	2660	3790	6200	8940	14500

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1909-24

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	573	1150	1760	2920	-----	-----
3	533	1020	1510	2380	-----	-----
7	474	881	1270	1950	-----	-----
15	410	774	1130	1760	-----	-----
30	364	671	949	1400	-----	-----
60	304	521	692	938	-----	-----
90	253	419	542	712	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1909-24

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
981	385	247	185	146	106	85	66	53	38	25	16	5.5	1.3	1.1	1.0	1.0

BEST DOCUMENT AVAILABLE

0:106000 DEEP CREEK NEAR CHOTEAU, MT

LOCATION.--Lat 47°45', long 112°14', in SW¼NW¼ sec.15, T.23 N., R.5 W., Teton County, Hydrologic Unit 10030205, 2 mi (3 km) downstream from Willow Creek and 5 mi (8 km) southwest of Choteau.

DRAINAGE AREA.--240 mi² (622 km²), approximately.

REVISED RECORDS.--WSP 1309: 1912, 1914, 1916-23.

PERIOD OF RECORD.--April 1911 to December 1924.

GAGE.--Nonrecording gage. Altitude of gage is 3,860 ft (1,177 m), by barometer.

REMARKS.--Several small diversions for irrigation above station.

AVERAGE DISCHARGE.--13 years (1911-24), 70.4 ft³/s (1.994 m³/s), 51,000 acre-ft/yr (62.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 3,700 ft³/s (105 m³/s) June 21, 1916, gage height, 10.5 ft (3.20 m), from rating curve extended above 1,300 ft³/s (36.8 m³/s) by logarithimic plotting; minimum observed, 3.0 ft³/s (0.085 m³/s) July 23-27, 1919, gage height, 4.90 ft (1.494 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1912-24

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	89	11	38	20	.54	4.4
NOVEMBER	67	24	36	12	.34	4.2
DECEMBER	87	15	32	19	.60	3.7
JANUARY	75	13	23	17	.71	2.7
FEBRUARY	51	12	22	11	.49	2.6
MARCH	86	13	39	20	.51	4.6
APRIL	149	30	73	35	.48	8.5
MAY	584	50	194	135	.70	22.5
JUNE	753	25	230	213	.93	26.7
JULY	529	11	102	134	1.32	11.8
AUGUST	112	8.4	41	29	.71	4.8
SEPTEMBER	77	8.6	31	20	.66	3.6
ANNUAL	165	28	72	41	.57	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1911-64

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
241	700	1650	2720	5100	8000	12500

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1912-24

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	14	7.9	5.6	4.0	-----	-----
3	14	8.2	5.7	4.1	-----	-----
7	14	8.7	6.5	5.0	-----	-----
14	14	9.5	7.5	6.1	-----	-----
30	15	10	8.1	6.6	-----	-----
60	17	12	9.7	8.2	-----	-----
90	18	13	10	9.1	-----	-----
120	20	14	12	10	-----	-----
183	26	19	17	15	-----	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1912-24

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	504	1160	1820	2990	-----	-----
3	415	916	1406	2240	-----	-----
7	337	734	1150	1810	-----	-----
15	275	541	886	1430	-----	-----
30	225	452	665	1020	-----	-----
60	178	332	465	671	-----	-----
90	147	260	355	503	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1912-24

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
625	242	148	111	87	58	45	36	30	24	19	14	13	9.1	6.4	5.8	3.7

06108000 TETON RIVER NEAR DUTTON, MT

LOCATION.--Lat 47°55'45", long 111°33'12", near center of south line of SW¼ sec.12, T.25 N., R.1 E., Teton County, Hydrologic Unit 10030205, on right bank 150 ft (45 m) upstream from Kerr Bridge, 0.9 mi (1.4 km) downstream from Hunt Coulee, and 9.5 mi (15.3 km) northeast of Dutton.

DRAINAGE AREA.--1,307 mi^2 (3,385 km^2). Area at site used prior to July 17, 1965, 1,308 mi^2 (3,388 km^2).

PERIOD OF RECORD.--August 1954 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,235 ft (986 m), from topographic map. Prior to July 17, 1965, water-stage recorder at site 1,800 ft (549 m) downstream at datum 1.97 ft (0.600 m) lower.

REMARKS.--Water is diverted on left bank in sec.34, T.25 N., R.7 W., for storage in Bynum Reservoir (usable capacity, 75,000 acre-ft or 92.5 hm^3). Diversions for irrigation of about 44,000 acres (178 km^2) above station.

AVERAGE DISCHARGE.--25 years, 168 ft^3/s (4.758 m^3/s), 121,700 acre-ft/yr (150 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 71,300 ft^3/s (2,020 m^3/s) June 9, 1964, gage height, 20.48 ft (6.242 m), present site and datum, from floodmark, from slope-area measurement of peak flow; minimum, 4.3 ft^3/s (0.12 m^3/s) Aug. 3, 4, 1977.

MONTHLY AND ANNUAL MEAN DISCHARGES 1955-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	223	18	82	51	.62	4.1
NOVEMBER	176	26	81	39	.48	4.0
DECEMBER	209	30	74	45	.61	3.7
JANUARY	167	27	58	26	.46	2.9
FEBRUARY	267	34	88	65	.74	4.4
MARCH	819	47	233	218	.94	11.6
APRIL	495	62	191	116	.61	9.5
MAY	957	44	321	242	.75	15.9
JUNE	2730	48	515	602	1.17	25.6
JULY	551	21	203	153	.75	10.1
AUGUST	263	9.6	91	64	.70	4.5
SEPTEMBER	183	14	77	47	.62	3.8
ANNUAL	350	56	168	80	.48	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1956-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	28	17	12	8.4	-----	-----
3	31	18	12	8.8	-----	-----
7	34	20	14	10	-----	-----
14	36	22	16	12	-----	-----
30	41	26	20	15	-----	-----
60	47	30	23	18	-----	-----
90	52	33	25	20	-----	-----
120	58	37	28	22	-----	-----
183	64	41	32	26	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1955-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1150	3020	5400	10600	-----	-----
3	993	2460	4180	7690	-----	-----
7	810	1850	2930	4930	-----	-----
15	643	1360	2050	3190	-----	-----
30	512	1010	1430	2070	-----	-----
60	383	716	982	1370	-----	-----
90	321	581	782	1060	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1955-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1300	557	345	259	206	145	109	85	68	56	47	36	28	21	17	12	7.4

BEST DOCUMENT AVAILABLE

06109500 MISSOURI RIVER AT VIRGELLE, MT

LOCATION.--Lat 48°00'14", long 110°15'19", in SW¼SW¼SE¼ sec.13, T.26 N., R.11 E., Chouteau County, Hydrologic Unit 10040101, on left bank 0.2 mi (0.3 km) upstream from Virgelle ferry, 0.6 mi (1.0 km) southwest of Virgelle, 3.4 mi (5.5 km) downstream from Spring Coulee, and at mile 2,032.6 (3,270.5 km).

DRAINAGE AREA.--34,379 mi² (89,042 km²).

PERIOD OF RECORD.--February 1935 to current year. Prior to October 1953, published as "at Loma."

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,507.50 ft (764.286 m) National Geodetic Vertical Datum of 1929. Prior to Sept. 30, 1953, water-stage recorder at Loma, 18 mi (29 km) upstream, at datum 2,543.40 ft (775.228 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Flow regulated by 23 smaller irrigation reservoirs and powerplants, Clark Canyon Reservoir, Canyon Ferry Reservoir, and Lake Elwell. Diversions for irrigation of about 850,400 acres (3,440 km²) above station.

AVERAGE DISCHARGE.--44 years, 8,624 ft³/s (244.2 m³/s), 6,248,000 acre-ft/yr (7.70 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 122,000 ft³/s (3,460 m³/s) June 5, 1953, gage height, 23.4 ft (7.13 m), from floodmark, from rating curve for former site at Loma extended above 66,000 ft³/s (1,870 m³/s), adjusted to present site; minimum daily, 638 ft³/s (18.1 m³/s) July 5, 1936.

MONTHLY AND ANNUAL MEAN DISCHARGES 1936-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	15300	3530	6170	2020	.33	6.0
NOVEMBER	12500	3210	6350	1810	.29	6.1
DECEMBER	12200	3220	6180	1750	.28	6.0
JANUARY	9600	2720	5970	1690	.28	5.8
FEBRUARY	10200	2600	6360	1890	.30	6.1
MARCH	14500	3780	7430	2420	.33	7.2
APRIL	17700	4060	9170	3460	.38	8.7
MAY	28300	4860	14600	5990	.41	14.1
JUNE	52000	4650	19500	10500	.54	18.9
JULY	29700	3700	9990	5010	.50	9.7
AUGUST	11900	2820	6000	2110	.35	5.8
SEPTEMBER	11600	2820	5700	1860	.33	5.5
ANNUAL	13700	4150	8620	2360	.28	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1936-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	3590	2460	1880	1460	1040	813
3	3920	3010	2590	2270	1950	1760
7	4340	3350	2860	2530	2170	1950
14	4530	3490	3030	2660	2320	2100
30	4670	3640	3170	2820	2470	2250
60	4940	3870	3390	3020	2660	2430
90	5200	4100	3600	3220	2820	2580
120	5450	4320	3800	3390	2980	2720
183	5750	4550	3960	3560	3130	2870

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1935-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
18000	28400	45300	58100	76000	90600	106000

WEIGHTED SKEW = 0.078

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1936-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	25100	40900	54700	76700	96900	121000
3	24600	39300	51500	70100	86500	105000
7	23800	36700	48400	60100	71400	83500
15	22000	33500	41300	52100	60400	69100
30	19400	29400	35900	44300	50600	57000
60	17000	24100	28600	33400	37800	41400
90	14600	20400	24100	28600	31900	35100

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1936-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
35000	21600	15900	12600	10600	8580	7510	6660	6070	5480	4950	4040	3510	3060	2760	2520	2040

BEST DOCUMENT AVAILABLE

06109800 SOUTH FORK JUDITH RIVER NEAR UTICA, MT

LOCATION.--Lat 46°45'00", long 110°18'54", in SE¼NE¼SW¼ sec.34, T.12 N., R.11 E., Judith Basin County, Hydrologic Unit 10040103, Lewis and Clark National Forest, on right bank just downstream from Trask Gulch, 8 mi (13 km) upstream from confluence with Middle Fork, and 18 mi (29 km) southwest of Utica.

DRAINAGE AREA.--58.7 mi^2 (152.0 m^2).

PERIOD OF RECORD.--August 1958 to September 1979.

GAGE.--Water-stage recorder. Altitude of gage is 5,420 ft (1,650 m), from topographic map.

REMARKS.--Minor diversions for irrigation above station.

AVERAGE DISCHARGE.--20 years, 22.7 ft^3/s (0.643 m^3/s), 16,450 acre-ft/yr (20.3 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,950 ft^3/s (55.2 m^3/s) June 19, 1979, gage height, 7.70 ft (2.347 m), from rating curve extended above 420 ft^3/s (11.9 m^3/s) on basis of slope-area measurement; minimum daily, 1.0 ft^3/s (0.028 m^3/s) Nov. 27, 1958.

MONTHLY AND ANNUAL MEAN DISCHARGES 1959-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	12	3.8	6.8	1.8	.26	2.5
NOVEMBER	9.2	2.9	5.3	1.4	.26	2.0
DECEMBER	6.5	2.3	4.4	1.1	.24	1.6
JANUARY	6.0	2.6	3.9	.94	.25	1.5
FEBRUARY	4.9	2.8	4.0	.57	.14	1.5
MARCH	13	2.4	5.1	2.3	.45	1.9
APRIL	47	5.3	21	14	.66	7.6
MAY	194	24	104	52	.50	38.5
JUNE	234	13	73	59	.81	26.9
JULY	53	5.3	23	12	.49	8.7
AUGUST	19	3.7	12	3.9	.34	4.3
SEPTEMBER	15	4.0	8.5	2.6	.31	3.1
ANNUAL	42	6.5	23	9.4	.42	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1960-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	2.6	1.9	1.6	1.4	-----	-----
3	2.7	2.1	1.8	1.5	-----	-----
7	2.9	2.3	2.0	1.7	-----	-----
14	3.2	2.6	2.3	2.1	-----	-----
30	3.5	3.0	2.8	2.6	-----	-----
60	3.8	3.3	3.1	2.9	-----	-----
90	3.9	3.4	3.1	2.9	-----	-----
120	4.1	3.6	3.3	3.1	-----	-----
183	4.9	4.1	3.8	3.5	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1959-76

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
122	243	478	682	981	1240	1520

WEIGHTED SKEW = 0.027

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1959-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	221	453	658	976	-----	-----
3	200	365	485	644	-----	-----
7	175	293	364	456	-----	-----
15	143	235	293	360	-----	-----
30	112	183	227	280	-----	-----
60	83	135	166	207	-----	-----
90	66	102	124	147	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1959-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
236	103	57	37	25	14	9.1	7.0	5.7	4.6	4.1	3.5	3.0	2.5	2.2	2.0	1.6

06110000 JUDITH RIVER NEAR UTICA, MT

LOCATION.--Lat 46°53'30", long 110°13'54", in NW¼ sec.17, T.13 N., R.12 E., Judith Basin County, on left bank at Noel Ranch, 4 mi (6 km) downstream from confluence of South and Middle Forks, 9 mi (14 km) southwest of Utica, and at mile 99.3 (159.8 km).

DRAINAGE AREA.--328 mi^2 (850 km^2).

PERIOD OF RECORD.--October 1919 to September 1975. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 896: 1939. WSP 1309: 1920, 1922(M), 1925, 1927(M), 1929-30, 1931(M), 1936(M), 1938(M).

GAGE.--Water-stage recorder. Concrete control since October 1938. Altitude of gage is 4,790 ft (1,460 m), by barometer. Prior to June 6, 1937, nonrecording gage at present site and datum.

REMARKS.--Few minor diversions for irrigation of hay meadows above station.

AVERAGE DISCHARGE.--56 years, 54.8 ft^3/s (1.552 m^3/s), 39,700 acre-ft/yr (49.0 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,750 ft^3/s (49.6 m^3/s) June 20, 1975, gage height, 6.52 ft (1.987 m); no flow Mar. 19-21, 1933.

MONTHLY AND ANNUAL MEAN DISCHARGES 1920-75

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	50	1.1	13	9.4	.75	1.9
NOVEMBER	33	.75	9.3	6.6	.71	1.4
DECEMBER	25	.50	6.0	4.1	.68	.90
JANUARY	18	.40	3.7	2.8	.76	.60
FEBRUARY	30	.30	3.3	4.2	1.29	.50
MARCH	51	.21	3.9	7.1	1.85	.60
APRIL	129	.25	22	32	1.42	3.4
MAY	475	8.9	194	108	.56	29.6
JUNE	835	33	271	184	.68	41.4
JULY	286	9.6	85	61	.71	13
AUGUST	97	4.4	29	20	.72	4.4
SEPTEMBER	51	1.5	16	11	.67	2.5
ANNUAL	141	8.8	55	29	.53	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1921-75

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	1.1	.45	.30	.15	.09	.00
3	1.2	.50	.31	.20	.10	.05
7	1.2	.51	.32	.21	.13	.09
14	1.3	.56	.36	.24	.15	.11
30	1.5	.70	.45	.31	.19	.14
60	2.1	1.1	.80	.59	.42	.33
90	2.6	1.4	.99	.73	.52	.41
120	3.3	1.8	1.3	.95	.67	.52
183	5.4	2.8	1.9	1.4	.91	.68

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1920-75

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
253	466	820	1100	1510	1830	2170

WEIGHTED SKEW = -0.358

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1920-75

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	438	719	890	1060	1200	1310
3	422	685	842	1010	1120	1220
7	388	624	761	909	1000	1080
15	344	552	675	810	697	972
30	300	482	589	706	781	847
60	231	367	442	520	567	606
90	177	281	339	398	433	462

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1920-75

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
565	303	173	106	64	27	15	9.5	6.2	3.8	2.4	1.5	1.0	.46	.33	.26	.21

06111000 ROSS FORK CREEK NEAR HOBSON, MT

LOCATION.--Lat 46°59', long 109°48', in NW¼ sec.11, T.14 N., R.15 E., Fergus County, Hydrologic Unit, 10040103, on left bank 1 mi (2 km) downstream from Hauck Coulee, 3.5 mi (5.6 km) east of Hobson, and 7 mi (11 km) upstream from mouth.

DRAINAGE AREA.--337 mi² (873 km²).

PERIOD OF RECORD.--June 1946 to December 1953, March 1955 to September 1962.

REVISED RECORDS.--WSP 1729: Drainage Area. WSP 1916: 1962(M).

GAGE.--Water-stage recorder. Altitude of gage is 3,860 ft (1,177 m), by barometer.

REMARKS.--Small diversions for irrigation of hay meadows above station. Flow may be augmented by operation of Ackley Lake which receives water from Judith River.

AVERAGE DISCHARGE.--14 years (1946-53, 1955-62), 14.0 ft³/s (0.397 m³/s), 10,140 acre-ft/yr (12.5 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,640 ft³/s (74.8 m³/s) May 21, 1962, gage height, 9.26 ft (2.822 m); no flow at times.

MONTHLY AND ANNUAL MEAN DISCHARGES 1947-53, 1956-62

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	3.4	.00	1.0	.98	.94	.60
NOVEMBER	6.1	.00	2.2	1.5	.70	1.3
DECEMBER	8.9	.00	2.7	2.1	.76	1.6
JANUARY	4.9	.70	2.1	1.3	.64	1.2
FEBRUARY	12	.97	4.9	3.1	.64	2.9
MARCH	175	2.9	63	57	.90	37.4
APRIL	219	2.0	41	56	1.36	24.5
MAY	133	2.6	23	33	1.43	13.7
JUNE	125	.71	23	32	1.42	13.6
JULY	11	.00	3.7	2.8	.75	2.2
AUGUST	4.8	.00	1.1	1.3	1.27	.60
SEPTEMBER	2.5	.00	.46	.67	1.47	.30
ANNUAL	26	1.4	14	8.2	.58	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1948-53, 1956-62

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.00	.00	.00	.00	-----	-----
3	.00	.00	.00	.00	-----	-----
7	.00	.00	.00	.00	-----	-----
14	.00	.00	.00	.00	-----	-----
30	.02	.00	.00	.00	-----	-----
60	.20	.00	.00	.00	-----	-----
90	.50	.10	.05	.00	-----	-----
120	.80	.40	.12	.00	-----	-----
183	1.3	.80	.50	.00	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1947-75

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
102	533	1080	1580	2350	3040	3840

WEIGHTED SKEW = 0.023

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1947-53, 1956-62

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	341	987	1480	2080	-----	-----
3	274	781	1150	1570	-----	-----
7	196	516	735	970	-----	-----
15	129	309	424	54.	-----	-----
30	85	197	272	353	-----	-----
60	57	115	149	184	-----	-----
90	43	82	104	126	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1947-53, 1956-62

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
245	44	26	16	10	5.5	3.6	2.5	1.7	1.2	.62	.10	.10	.10	.10	.10	.10

BEST DOCUMENT AVAILABLE

06111500 BIG SPRING CREEK NEAR LEWISTOWN, MT

LOCATION.--Lat 47°00'20", long 109°21'00", in SW¼NW¼ sec.5, T.14 N., R.19 E., Fergus County, Hydrologic Unit, 10040103, on upstream side of wingwall of old highway bridge, 0.5 mi (0.8 km) downstream from Big Springs and 5 mi (8 km) southeast of Lewistown.

DRAINAGE AREA.--20.9 mi^2 (54.1 km^2).

PERIOD OF RECORD.--June 1932 to September 1957.

REVISED RECORDS.--WSP 1729: Drainage Area.

GAGE.--Water-stage recorder. Altitude of gage is 4,130 ft (1,259 m), by barometer. Prior to Apr. 27, 1955, nonrecording gage on downstream left wingwall.

REMARKS.--The city of Lewistown diverts water above station for municipal supply.

AVERAGE DISCHARGE.--25 years (1932-57), 107 ft^3/s (3.030 m^3/s), 77,460 acre-ft/yr (95.5 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 250 ft^3/s (7.08 m^3/s) May 30, 1953, gage height, 1.95 ft (0.594 m), from floodmark, from rating curve extended above 120 ft^3/s (3.40 m^3/s); minimum observed, 76 ft^3/s (2.15 m^3/s) Feb. 1-8, 1938.

MONTHLY AND ANNUAL MEAN DISCHARGES 1933-57

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	154	91	109	13	.12	8.5
NOVEMBER	157	88	108	13	.12	8.4
DECEMBER	157	88	108	14	.13	8.4
JANUARY	155	84	106	14	.14	8.3
FEBRUARY	145	77	106	13	.13	8.2
MARCH	136	80	108	13	.12	8.4
APRIL	128	81	107	11	.10	8.3
MAY	156	82	106	14	.13	8.2
JUNE	144	83	108	13	.12	8.4
JULY	143	84	106	11	.10	8.2
AUGUST	140	86	106	10	.10	8.2
SEPTEMBER	145	90	108	11	.10	8.4
ANNUAL	134	87	107	10	.10	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1934-57

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	94	86	83	80	77	-----
3	95	87	83	80	76	-----
7	95	87	83	80	76	-----
14	96	88	83	80	76	-----
30	97	89	84	81	77	-----
60	98	90	86	83	80	-----
90	100	91	88	85	82	-----
120	100	92	89	86	84	-----
183	102	94	91	89	86	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
--	--	--	--	--	--	--

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1933-57

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	127	158	181	214	242	-----
3	125	148	167	195	218	-----
7	121	141	156	177	193	-----
15	118	134	145	161	173	-----
30	115	128	138	150	160	-----
60	112	124	133	145	154	-----
90	111	123	132	144	153	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1933-57

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
156	129	122	118	116	112	109	106	104	102	99	93	88	84	82	80	77

06114500 WOLF CREEK NEAR STANFORD, MT

LOCATION.--Lat 47°07', long 110°17', in NE¼SE¼ sec.26, T.16 N., R.11 E., Judith Basin County, Hydrologic Unit 10040103, 0.5 mi (0.8 km) downstream from confluence of Dry Wolf and Running Wolf Creeks and 4 mi (6 km) southwest of Stanford.

DRAINAGE AREA.--112 mi² (290 km²).

PERIOD OF RECORD.--March 1950 to November 1953, March 1955 to December 1958, July 1959 to September 1962.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 4,490 ft (1,370 m), by barometer.

REMARKS.--Some regulation from a small dam 0.3 mi (0.5 km) upstream. Many diversions for irrigation above station.

AVERAGE DISCHARGE.--9 years, 5.58 ft³/s (0.158 m³/s), 4,040 acre-ft/yr (4.98 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 578 ft³/s (16.4 m³/s) does not include an estimated 50 ft³/s (1.42 m³/s) in bypass channel on left bank, June 4, 1953, gage height 4.51 ft (1.375 m), from rating curve extended above 52 ft³/s (1.47 m³/s) on basis of velocity-area study; no flow Nov. 17, 1951, result of ice jam upstream.

MONTHLY AND ANNUAL MEAN DISCHARGES 1951-53, 1956-58, 1960-62

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	6.1	.64	3.5	2.1	.60	5.2
NOVEMBER	4.9	.90	3.1	1.6	.52	4.6
DECEMBER	4.9	.97	2.8	1.4	.49	4.1
JANUARY	4.3	.53	2.4	1.2	.51	3.5
FEBRUARY	4.4	.47	2.3	1.3	.56	3.4
MARCH	3.8	.60	2.2	1.2	.52	3.3
APRIL	5.5	1.0	2.9	1.7	.58	4.3
MAY	13	1.3	4.4	3.6	.83	6.5
JUNE	197	1.2	28	64	2.25	42
JULY	19	1.0	7.0	5.4	.77	10.3
AUGUST	10	.76	4.7	3.1	.66	7.0
SEPTEMBER	7.0	.73	3.8	2.2	.57	5.6
ANNUAL	22	1.6	5.6	6.3	1.13	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1950-62

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
6.4	19	61	124	226	355	538

WEIGHTED SKEW = 0.177

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1951-53, 1956-58, 1961-62

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.66	.36	.26	-----	-----	-----
3	.79	.43	.29	-----	-----	-----
7	.97	.51	.34	-----	-----	-----
14	1.2	.61	.42	-----	-----	-----
30	1.4	.75	.52	-----	-----	-----
60	1.6	.85	.59	-----	-----	-----
90	1.9	1.1	.73	-----	-----	-----
120	2.1	1.2	.83	-----	-----	-----
183	2.3	1.3	.88	-----	-----	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1951-53, 1956-58, 1960-62

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	8.5	35	100	-----	-----	-----
3	7.9	33	90	-----	-----	-----
7	7.5	29	77	-----	-----	-----
15	7.2	28	75	-----	-----	-----
30	6.7	24	57	-----	-----	-----
60	6.1	19	46	-----	-----	-----
90	5.5	15	31	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1951-53, 1956-58, 1960-62

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
37	11	7.6	6.2	5.5	4.5	3.8	3.1	2.5	1.8	1.4	1.0	.76	.55	.46	.41	.23

06115000 MISSOURI RIVER AT POWERPLANT FERRY, NEAR ZORTMAN, MT

LOCATION.--Lat 47°43'51", long 108°56'06", in NE¼NE¼ sec.30, T.23 N., R.22 E., Phillips County, Hydrologic Unit 10040104, at powerplant ferry, 1.5 mi (2.4 km) downstream from Woodhawk Creek, and 22 mi (35.4 km) southwest of Zortman.

DRAINAGE AREA.--40,763 mi² (105,576 km²).

PERIOD OF RECORD.--February 1934 to September 1968.

GAGE.--Water-stage recorder. Datum of gage is 2,273.02 ft (692.816 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Feb. 7, 1935, wire-weight gage at same site and datum. Feb. 7, 1935, to Oct. 9, 1963, graphic water-stage recorder at present site and datum.

REMARKS.--Diversions for irrigation of about 869,200 acres (3.52 km²) above station. Flow regulated by 27 reservoirs upstream. Considerable fluctuation at medium and low flow caused by 9 powerplants above station.

AVERAGE DISCHARGE.--34 years, 8,855 ft³/s (250.8 m³/s), 6,411,000 acre-ft/yr (7.90 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 137,000 ft³/s (3,880 m³/s) June 6, 1953, gage height, 22.20 ft (6,766 m), from graph based on gage readings; maximum gage height, 30.16 ft (9.193 m) Mar. 19, 1947 (ice jam), from floodmark; minimum discharge, 1,120 ft³/s (31.7 m³/s) July 8, 1936, gage height, 1.92 ft (0.585 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1935-68

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	16500	3270	6240	2230	.36	5.9
NOVEMBER	13900	3580	6520	1970	.30	6.1
DECEMBER	13200	3120	6170	1940	.31	5.8
JANUARY	9740	2810	5680	1600	.28	5.3
FEBRUARY	11400	2510	6250	2090	.33	5.9
MARCH	13400	4880	7830	2230	.28	7.4
APRIL	19200	4340	9430	3750	.40	8.9
MAY	27200	5260	14400	5640	.39	13.6
JUNE	55300	7900	22100	12500	.57	20.8
JULY	20300	3960	10200	4640	.46	9.6
AUGUST	10300	3120	5830	1830	.31	5.5
SEPTEMBER	12300	3150	5660	1720	.30	5.3
ANNUAL	14200	4440	8860	2510	.28	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1935-68

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	3230	2270	1860	1560	1260	-----
3	3590	2530	2060	1710	1370	-----
7	4070	3000	2500	2120	1730	-----
14	4400	3330	2810	2410	2000	-----
30	4660	3550	3000	2580	2140	-----
60	4970	3820	3260	2820	2360	-----
90	5270	4080	3490	3030	2540	-----
120	5530	4330	3740	3280	2800	-----
183	5710	4480	3910	3490	3040	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1934-67

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
20000	31800	50700	64900	84600	100000	117000

WEIGHTED SKEW = -0.089

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1935-68

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	27500	46100	63500	93000	122000	-----
3	26700	44100	59900	86000	111000	-----
7	25600	40700	53300	72500	89700	-----
15	23500	36600	46800	61800	74500	-----
30	21200	32200	40200	51200	59900	-----
60	17900	25900	31100	37700	42500	-----
90	15200	21600	25800	31100	35000	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1935-68

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
39800	22600	16600	12900	10800	8450	7390	6750	6150	5600	4910	4010	3510	3030	2750	2460	1920

BEST DOCUMENT AVAILABLE

06115200 MISSOURI RIVER NEAR LANDUSKY, MT

LOCATION.--Lat 47°37'51", long 108°41'13", in NW¼NE¼ sec.31, T.22 N., R.24 E., Fergus County, Hydrologic Unit 10040104, Fort Peck Game Range, on right bank 380 ft (116 m) upstream from bridge on U.S. Highway 191, 0.9 mi (1.4 km) upstream from Armells Creek, 20 mi (32 km) south of Landusky, and at mile 1,921.61 (3,091.87 km).

DRAINAGE AREA.--40,987 mi² (106,156 km²). Area at site used prior to Dec. 13, 1968, 40,763 mi² (105,576 km²).

PERIOD OF RECORD.--February 1934 to current year. Prior to October 1968, published as "at powerplant ferry, near Zortman."

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,239.96 ft (682.740 m) National Geodetic Vertical Datum of 1929 (State Highway bench mark). Prior to Feb. 7, 1935, nonrecording gage, and Feb. 7, 1935, to Dec. 12, 1968, water-stage recorder, at site 16.5 mi (26.5 km) upstream at datum 33.06 ft (10.077 m) higher.

REMARKS.--Flow regulated by 24 smaller irrigation reservoirs and powerplants, Clark Canyon Reservoir, Canyon Ferry Reservoir, and Lake Elwell. Diversions for irrigation of about 870,400 acres (3,520 km²) above station.

AVERAGE DISCHARGE.--45 years, 9,388 ft³/s (265.9 m³/s), 6,802,000 acre-ft/yr (9.39 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 137,000 ft³/s (3,880 m³/s) June 6, 1953, gage height, 22.20 ft (6.767 m), from graph based on gage readings, site and datum then in use; maximum gage height, 30.16 ft (9.193 m) Mar. 19, 1947 (ice jam), from floodmark, site and datum then in use; maximum gage height, present site and datum, 34.17 ft (10.418 m) Mar. 26, 1978 (ice jam), from floodmark; minimum discharge, 1,120 ft³/s (31.7 m³/s) July 8, 1936, gage height, 1.92 ft (0.585 m), site and datum then in use.

MONTHLY AND ANNUAL MEAN DISCHARGES 1935-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	16500	3270	6610	2180	.33	5.9
NOVEMBER	13900	3580	6840	1920	.28	6.1
DECEMBER	13200	3120	6570	1890	.29	5.8
JANUARY	10800	2610	6280	1830	.29	5.6
FEBRUARY	11400	2510	6900	2220	.32	6.1
MARCH	19700	4860	8740	3290	.38	7.8
APRIL	19200	4340	10100	3640	.36	9.0
MAY	30500	5260	15600	6480	.42	13.8
JUNE	55300	4940	21400	11700	.55	19
JULY	33600	3950	11100	5700	.51	9.8
AUGUST	12600	3120	6510	2270	.35	5.8
SEPTEMBER	12300	3150	6120	1940	.32	5.4
ANNUAL	15300	4440	9390	2660	.28	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1935-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT: 2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	3660	2530	2030	1670	1320	1120
3	4040	2800	2250	1850	1450	1220
7	4480	3250	2680	2260	1830	1580
14	4790	3560	2990	2560	2120	1850
30	5090	3800	3190	2730	2260	1980
60	5380	4060	3440	2970	2490	2200
90	5660	4320	3680	3190	2680	2370
120	5910	4570	3930	3440	2930	2610
183	6170	4780	4140	3640	3140	2820

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1953-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT: 1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
19400	32300	53000	68300	89200	106000	123000

WEIGHTED SKEW = -0.098

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1935-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT: 2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	28500	47500	63400	86700	111000	138000
3	27600	45000	59400	81400	101000	123000
7	26300	41100	52400	68500	81600	96300
15	24000	36700	45900	58500	68500	79100
30	21500	32100	39500	49200	56000	64200
60	18300	26100	31100	37200	41600	45800
90	15900	22300	26500	31600	35200	38800

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1935-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
39800	23800	17400	13700	11600	9290	8160	7280	6610	5940	5240	4290	3650	3210	2780	2490	2010

06115500 NORTH FORK MUSSELSHELL RIVER NEAR DELPINE, MT

LOCATION.--Lat 46°36'36", long 110°34'30", in SW¼SE¼ sec.22, T.10 N., R.9 E., Meagher County, Hydrologic Unit 10040201, on right bank 0.5 mi (0.8 km) upstream from high-water line of Bair Reservoir at elevation 5,330 ft (1,630 m), 3 mi (5 km) downstream from Lion Creek, and 4 mi (6 km) northwest of Delpine.

DRAINAGE AREA.--31.4 mi² (81.3 km²).

PERIOD OF RECORD.--May 1940 to September 1979. Seasonal record 1977-79.

REVISED RECORDS.--WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 5,380 ft (1,640 m), by barometer.

REMARKS.--Small diversions for irrigation of hay meadows above station.

AVERAGE DISCHARGE.--36 years (1940-76), 12.2 ft³/s (0.346 m³/s), 8,840 acre-ft/yr (10.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 423 ft³/s (12.0 m³/s) Apr. 1, 1950, gage height, 4.63 ft (1.411 m), from rating curve extended above 150 ft³/s (4.25 m³/s); minimum, 1.6 ft³/s (0.045 m³/s) Aug. 16, 1941, gage height, 0.32 ft (0.098 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1941-76

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	16	2.9	7.0	2.9	.41	4.8
NOVEMBER	13	3.9	7.4	1.9	.25	5.1
DECEMBER	12	4.2	6.4	1.7	.26	4.4
JANUARY	8.9	3.6	5.7	1.3	.23	3.9
FEBRUARY	15	3.0	6.3	2.2	.35	4.3
MARCH	29	2.4	9.2	5.3	.58	6.3
APRIL	41	5.6	18	8.9	.49	12.3
MAY	51	5.2	26	12	.47	17.9
JUNE	65	5.3	30	14	.47	20.3
JULY	29	3.3	14	6.1	.44	9.5
AUGUST	17	2.6	9.1	3.7	.41	6.2
SEPTEMBER	16	3.0	7.4	3.1	.42	5.0
ANNUAL	20	5.8	12	3.6	.29	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1941-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
46	86	156	215	299	373	453

WEIGHTED SKEW = -0.056

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1942-76

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	3.3	2.5	2.2	2.0	1.8	-----
3	3.5	2.7	2.4	2.2	1.9	-----
7	3.8	2.9	2.6	2.3	2.0	-----
14	4.0	3.1	2.8	2.5	2.2	-----
30	4.4	3.5	3.0	2.7	2.4	-----
60	4.8	3.8	3.3	3.0	2.7	-----
90	5.2	4.1	3.6	3.3	2.9	-----
120	5.6	4.5	4.0	3.6	3.3	-----
183	6.1	5.0	4.6	4.3	4.0	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1941-76

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	54	86	109	137	159	-----
3	47	72	86	107	120	-----
7	43	64	75	88	97	-----
15	39	55	64	73	78	-----
30	34	48	56	63	67	-----
60	29	40	46	52	55	-----
90	26	35	43	45	48	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1941-76

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
58	38	27	21	17	12	9.3	7.8	6.8	6.0	5.2	4.4	3.8	3.0	2.8	2.6	2.1

06117000 CHECKERBOARD CREEK AT DELPINE, MT

LOCATION.--Lat 46°34', long 110°34', in NE¼ sec.2, T.9 N., R.9 E., Meagher County, Hydrologic Unit 10040201, 500 ft (152 m) downstream from highway bridge, at Delpine, 0.3 mi (0.5 km) downstream from Brooks Creek, and 0.5 mi (0.80 km) upstream from mouth.

DRAINAGE AREA.--23.6 mi^2 (61.1 km^2).

PERIOD OF RECORD.--April 1922 to September 1932.

REVISED RECORDS.--WSP 1309: Drainage area.

GAGE.--Nonrecording gage. Altitude of gage is 5,200 ft (1,585 m), by barometer. Prior to Aug. 9, 1927, 500 ft (152 m) upstream at different datums.

REMARKS.--Diversion for irrigation above station.

AVERAGE DISCHARGE.--9 years (1922-30, 1931-32), 8.36 ft^3/s (0.233 m^3/s), 6,060 acre-ft/Yr (7.47 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 167 ft^3/s (4.73 m^3/s) July 16, 1923, gage height, 3.1 ft (0.94 m), site and datum then in use, from rating curve extended above 40 ft^3/s (1.13 m^3/s); minimum observed, 0.6 ft^3/s (0.02 m^3/s) July 13-15, 1931, gage height, 0.96 ft (0.293 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1923-30, 1932

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	7.8	2.2	4.7	2.0	.43	4.7
NOVEMBER	6.0	1.7	5.2	2.2	.42	5.2
DECEMBER	6.8	1.4	4.2	1.9	.45	4.2
JANUARY	5.5	1.0	3.4	1.5	.44	3.4
FEBRUARY	4.8	1.0	3.1	1.1	.36	3.2
MARCH	12	1.5	5.2	3.6	.70	5.2
APRIL	29	3.8	13	8.9	.69	13
MAY	57	8.7	26	16	.63	26.2
JUNE	39	3.6	17	12	.72	16.9
JULY	30	1.5	9.0	8.7	.97	9.0
AUGUST	13	.98	5.1	4.4	.85	5.1
SEPTEMBER	9.7	1.3	4.0	3.0	.74	4.0
ANNUAL	14	2.5	8.4	4.0	.48	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1923-31

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	1.5	.70	.50	-----	-----	-----
3	1.7	1.1	.78	-----	-----	-----
7	1.8	1.1	.81	-----	-----	-----
14	1.9	1.2	.88	-----	-----	-----
30	2.0	1.3	1.0	-----	-----	-----
60	2.3	1.5	1.2	-----	-----	-----
90	2.8	1.6	1.4	-----	-----	-----
120	3.1	2.0	1.6	-----	-----	-----
183	3.8	2.4	1.6	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1922-32

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
23	53	112	164	243	312	389

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1923-30, 1932

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	49	103	148	-----	-----	-----
3	45	88	121	-----	-----	-----
7	39	70	92	-----	-----	-----
15	33	57	73	-----	-----	-----
30	28	50	65	-----	-----	-----
60	22	37	48	-----	-----	-----
90	18	30	37	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1923-30, 1932

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
62	31	16	13	11	7.7	6.0	4.9	4.2	3.3	2.4	1.7	1.3	1.1	1.0	.90	.76

06118500 SOUTH FORK MUSSELSHELL RIVER ABOVE MARTINSDALE, MT

LOCATION.--Lat 46°27'21", long 110°22'54", in SW¼NW¼ sec.17, T.8 N., R.11 E., Meagher County, Hydrologic Unit 10040201, on left bank 2 mi (3 km) downstream from Cottonwood Creek, 3 mi (5 km) west of Martinsdale, and 6 mi (10 km) upstream from confluence with North Fork.

DRAINAGE AREA.--287 mi² (743 km²).

PERIOD OF RECORD.--October 1941 to September 30, 1979. Monthly discharge only November 1941 to May 1942, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1942(M), 1944(M). WSP 1729: Drainage area. WDR MT-75-1: 1948, 1964(M), 1967.

GAGE.--Water-stage recorder. Altitude of gage is 4,900 ft (1,490 m), by barometer. Prior to May 15, 1942, nonrecording gage at same site and datum.

REMARKS.--Diversions for irrigation of about 6,600 acres (26.7 km²) of which 250 acres (1.01 km²) is below station.

AVERAGE DISCHARGE.--38 years, 91.3 ft³/s (2.586 m³/s), 66,150 acre-ft/yr (81.6 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,240 ft³/s (148 m³/s) June 19, 1975, gage height, 7.27 ft (2.216 m); minimum, 0.1 ft³/s (0.003 m³/s) Aug. 28 to Sept. 2, 1949, Mar. 29, 1950.

MONTHLY AND ANNUAL MEAN DISCHARGES 1942-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	95	4.1	31	19	.60	2.8
NOVEMBER	60	13	28	11	.39	2.5
DECEMBER	58	9.4	23	11	.47	2.1
JANUARY	51	7.3	18	8.1	.44	1.7
FEBRUARY	41	7.8	21	7.3	.36	1.9
MARCH	106	4.6	35	22	.63	3.2
APRIL	370	15	113	73	.64	10.3
MAY	783	41	334	170	.51	30.4
JUNE	1320	67	365	248	.68	33.3
JULY	370	5.0	80	67	.83	7.3
AUGUST	82	.91	25	18	.72	2.3
SEPTEMBER	105	.44	23	18	.79	2.1
ANNUAL	212	23	91	40	.44	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1943-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	6.9	2.3	1.1	.49	.18	-----
3	7.4	2.5	1.2	.54	.20	-----
7	8.7	3.3	1.6	.73	.27	-----
14	10	4.0	1.9	.91	.34	-----
30	12	5.5	2.9	1.5	.63	-----
60	14	8.2	5.7	4.0	2.5	-----
90	16	11	8.0	6.2	4.5	-----
120	18	13	10	8.3	6.4	-----
183	21	15	12	10	8.1	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1942-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
461	734	1210	1600	2160	2640	3180

WEIGHTED SKEW = 0.028

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1942-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	694	1220	1680	2430	3110	-----
3	650	1080	1430	1930	2350	-----
7	586	927	1160	1460	1680	-----
15	513	796	981	1210	1370	-----
30	449	687	831	995	1110	-----
60	345	516	611	711	773	-----
90	269	400	473	550	597	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1942-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
843	446	259	166	112	54	37	28	23	19	15	12	8.2	4.8	2.5	.97	.31

06120500 MUSSELSHELL RIVER AT HARLOWTON, MT

LOCATION.--Lat 46°25'48", long 109°50'24", in NE¼ sec.28, T.8 N., R.15 E., Wheatland County, Hydrologic Unit 10040201, on left bank 350 ft (107 m) downstream from bridge on U.S. Highway 191, 1 mi (2 km) southwest of Harlowton, and 6 mi (10 km) upstream from American Fork.

DRAINAGE AREA.--1,125 mi² (2,914 km²).

PERIOD OF RECORD.--July 1907 to November 1929, March 1930 to December 1932, April to August 1933, February 1934 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1912, 1915(M), 1918, 1925. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,171.46 ft (1,271.461 m) National Geodetic Vertical Datum of 1929 (levels by Morrison and Maierle Inc.). Prior to Dec. 8, 1937, nonrecording gages at site 1.2 mi (1.9 km) downstream at different datums. Dec. 8, 1937, to Aug. 26, 1955, nonrecording gage at bridge 300 ft (90 m) upstream at different datums.

REMARKS.--Some regulation by Bair and Martinsdale Reservoirs. Diversions for irrigation of about 37,000 acres (150 km²) above station of which about 2,300 acres (9.31 km²) is flood irrigated.

AVERAGE DISCHARGE.--69 years (1907-29, 1930-32, 1934-79), 165 ft³/s (4.673 m³/s) 119,500 acre-ft/yr (147 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 7,270 ft³/s (206 m³/s) June 20, 1975, gage height, 10.10 ft (3.051 m); no flow at times.

MONTHLY AND ANNUAL MEAN DISCHARGES 1908-29, 1931-32, 1935-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	226	.00	76	48	.62	3.9
NOVEMBER	176	.00	82	38	.46	4.1
DECEMBER	206	.00	70	35	.51	3.5
JANUARY	250	.00	59	33	.56	3.0
FEBRUARY	150	10	63	30	.47	3.2
MARCH	500	20	124	93	.75	6.2
APRIL	632	22	200	138	.69	10.1
MAY	1960	12	458	347	.76	23.1
JUNE	2470	36	555	467	.84	28
JULY	751	.84	165	143	.87	8.3
AUGUST	275	.00	70	59	.85	3.5
SEPTEMBER	254	.00	62	53	.85	3.1
ANNUAL	483	21	165	86	.52	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1909-29, 1931-32, 1935-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT: 2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	21	3.5	.00	.00	.00	.00
3	24	4.5	.00	.00	.00	.00
7	26	4.6	.00	.00	.00	.00
14	29	4.9	.00	.00	.00	.00
30	34	6.0	.30	.00	.00	.00
60	43	11	2.5	.30	.00	.00
90	50	13	3.5	.50	.00	.00
120	58	20	8.5	3.1	.60	.10
183	62	32	20	12	5.8	5.0

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1909-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT: 1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
516	1090	2110	2940	4090	5020	5970

WEIGHTED SKEW = 0.360

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1908-29, 1931-32, 1935-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT: 2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1070	1970	2580	3340	3870	4370
3	995	1790	2300	2900	3300	3660
7	879	1570	2000	2480	2780	3050
15	752	1350	1720	2110	2360	2570
30	628	1130	1440	1760	1960	2130
60	474	845	1070	1330	1490	1630
90	384	666	838	1030	1150	1260

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1908-29, 1931-32, 1935-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1410	693	405	265	190	128	97	78	66	54	41	25	7.2	.10	.10	.10	.10

06121000 AMERICAN FORK NEAR HARLOWTON, MT

LOCATION.--Lat 46°22',long 109°48', in SW¼ sec.12, T.7 N., R.15 E., Wheatland County, Hydrologic Unit 10040201, 0.5 mi (0.8 km) upstream from Lebo Creek and 5 mi (8 km) southeast of Harlowton.

DRAINAGE AREA.--100 mi^2 (259 km^2).

PERIOD OF RECORD.--August 1907 to December 1911, June to October 1913, May 1924 to September 1932. Miscellaneous measurements 1912. No winter record 1930-31.

REVISED RECORDS.--WSP 1309: 1908(M), 1909, 1925, 1927-29, drainage area.

GAGE.--Nonrecording gage. Altitude of gage is 4,220 ft (1,286 m), by barometer.

REMARKS.--Diversions for irrigation above station.

AVERAGE DISCHARGE.--10 years (1907-11, 1924-29, 1931-32), 16.7 (0.473 m), 12,100 acre-ft/yr (14.9 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 980 ft^3/s (27.8 m^3/s) June 1, 1908, gage height, 4.60 ft (1.402 m), from rating curve extended above 550 ft^3/s (15.6 m^3/s); no flow at times most years.

MONTHLY AND ANNUAL MEAN DISCHARGES 1908-11, 1925-29, 1932

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	13	.00	4.6	3.6	.77	2.3
NOVEMBER	8.4	.00	4.0	2.2	.56	2.0
DECEMBER	4.4	.00	2.8	1.4	.51	1.4
JANUARY	4.0	.00	2.2	1.2	.54	1.1
FEBRUARY	7.6	.00	2.3	2.1	.91	1.1
MARCH	11	.00	4.6	3.4	.74	2.3
APRIL	22	.00	6.6	5.8	.88	3.3
MAY	116	.70	53	37	.70	26.4
JUNE	294	1.4	108	112	1.04	53.7
JULY	31	.00	9.5	12	1.28	4.7
AUGUST	5.6	.00	1.4	2.0	1.41	.70
SEPTEMBER	5.6	.00	2.2	2.0	.92	1.1
ANNUAL	40	2.8	17	12	.70	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
--	--	--	--	--	--	--

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1909-11, 1926-29, 1932

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.00	.00	.00	-----	-----	-----
3	.00	.00	.00	-----	-----	-----
7	.00	.00	.00	-----	-----	-----
14	.00	.00	.00	-----	-----	-----
30	.05	.00	.00	-----	-----	-----
60	.14	.00	.00	-----	-----	-----
90	1.0	.20	.00	-----	-----	-----
120	2.0	.50	.00	-----	-----	-----
183	2.8	1.2	.00	-----	-----	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1908-11, 1925-29, 1932

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	249	480	693	-----	-----	-----
3	214	416	605	-----	-----	-----
7	170	340	509	-----	-----	-----
15	135	269	398	-----	-----	-----
30	103	207	299	-----	-----	-----
60	62	127	184	-----	-----	-----
90	45	91	129	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1908-11, 1925-29, 1932

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
298	84	31	11	7.1	4.9	3.7	3.0	2.4	1.8	.73	.10	.00	.00	.00	.00	.00

BEST DOCUMENT AVAILABLE

06121500 LEBO CREEK NEAR HARLOWTON, MT

LOCATION.--Lat 46°23', long 109°48', in SW¼ sec.12, T.7 N., R.15 E., Wheatland County, Hydrologic Unit 10040201, 0.5 mi (0.8 km) upstream from mouth, and 4 mi (6 km) south of Harlowton.

DRAINAGE AREA.--59.1 mi² (153.1 km²).

PERIOD OF RECORD.--August 1907 to November 1914, April 1924 to September 1932. No winter record 1908-09, 1912-13, 1931.

REVISED RECORDS.--WSP 1709: 1910, 1925(M), 1926-28, 1931(M), drainage area.

GAGE.--Nonrecording gage. Altitude of gage is 4,220 ft (1 286 m), by barometer. Prior to May 3, 1924, at same site at datum 0.71 ft (0.216 m) higher.

REMARKS.--Regulation and diversions for irrigation above station.

AVERAGE DISCHARGE.--9 years (1909-11, 1924-30, 1931-32), 13.2 ft³/s (0.374 m³/s), 9,560 acre-ft/yr (11.8 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 417 ft³/s (11.8 m³/s) July 6, 1928, gage height, 6.90 ft (2.103 m), from rating curve extended above 40 ft³/s (1.13 m³/s); no flow at times during 1928, 1930.

MONTHLY AND ANNUAL MEAN DISCHARGES 1910-11, 1925-30, 1932

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	25	1.2	14	7.5	.52	9.1
NOVEMBER	25	2.9	17	7.7	.45	10.9
DECEMBER	20	2.0	13	6.0	.46	8.3
JANUARY	16	1.5	10	4.6	.45	6.4
FEBRUARY	18	1.0	11	4.9	.46	6.8
MARCH	30	3.0	16	8.5	.52	10.3
APRIL	29	3.7	17	7.3	.43	10.5
MAY	31	2.4	16	9.1	.57	10
JUNE	60	1.1	15	19	1.21	9.7
JULY	27	1.3	7.0	7.9	1.13	4.4
AUGUST	19	2.1	8.4	5.3	.63	5.3
SEPTEMBER	25	2.1	13	7.7	.58	8.3
ANNUAL	21	3.2	13	5.4	.41	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1910-11, 1926-30, 1932

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	1.0	.20	.00	-----	-----	-----
3	1.2	.25	.05	-----	-----	-----
7	1.5	.63	.43	-----	-----	-----
14	2.1	1.0	.77	-----	-----	-----
30	2.9	1.5	1.0	-----	-----	-----
60	4.9	2.3	1.5	-----	-----	-----
90	6.7	3.1	2.0	-----	-----	-----
120	8.4	4.0	2.5	-----	-----	-----
183	11	5.1	3.1	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
--	--	--	--	--	--	--

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1910-11, 1925-30, 1932

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	54	100	142	-----	-----	-----
3	44	73	96	-----	-----	-----
7	34	56	75	-----	-----	-----
15	29	47	62	-----	-----	-----
30	25	38	48	-----	-----	-----
60	24	33	38	-----	-----	-----
90	21	29	32	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1910-11, 1925-30, 1932

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
44	29	25	22	20	17	14	12	11	7.5	4.5	2.2	1.5	1.1	.78	.24	.10

BEST DOCUMENT AVAILABLE

06122000 AMERICAN FORK BELOW LEBO CREEK, NEAR HARLOWTON, MT

LOCATION.--Lat 46°23'34", long 109°45'49", in SE¼ sec.6, T.7 N.,R.16 E., Wheatland County, Hydrologic Unit 10040201, on left bank 2 mi (3 km) upstream from mouth, 2 mi (3 km) downstream from Lebo Creek, and 5 mi (8 km) southeast of Harlowton.

DRAINAGE AREA.--266 mi² (430 km²).

PERIOD OF RECORD.--July 1946 to September 1967. Monthly discharge only for July 1946, published in WSP 1309.

REVISED RECORDS.--WSP-1116: 1947. WSP 1309: 1948(M), 1950(M). WSP 1629: 1948(P). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 4,170 ft (1,271 m), by barometer.

REMARKS.--Diversions for irrigation of about 7,500 acres (30.4 km²), of which 300 acres (1.21 km²) is below station. During irrigation season, natural flow is supplemented by release from Lake Lebo, capacity, about 3,000 acre-ft (3.70 hm³). Diversions from headwaters in T.5 N.,R.12 E., to irrigate about 300 acres (1.21 km²) in Sweet Grass Creek drainage in Yellowstone River Basin.

AVERAGE DISCHARGE.--21 years (1946-67), 31.0 ft³/s (0.878 m³/s), 22,440 acre-ft/yr (27.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,570 ft³/s (44.5 m³/s) June 14, 1967, gage height, 5.97 ft (1.820 m); no flow Sept. 13-16, 1960, Aug. 6-8, 1961, Aug. 12,13, 1964.

MONTHLY AND ANNUAL MEAN DISCHARGES 1947-67

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	39	2.7	13	9.9	.74	3.6
NOVEMBER	30	5.3	15	7.0	.46	4.0
DECEMBER	32	7.5	15	6.4	.44	3.9
JANUARY	25	4.9	13	5.3	.40	3.5
FEBRUARY	39	5.2	17	7.8	.47	4.5
MARCH	59	10	23	12	.52	6.2
APRIL	62	7.7	23	13	.55	6.3
MAY	163	4.8	70	48	.69	18.9
JUNE	547	7.5	130	134	1.03	34.7
JULY	139	4.3	31	30	.97	8.4
AUGUST	28	2.0	11	7.0	.66	2.9
SEPTEMBER	52	1.7	12	11	.96	3.1
ANNUAL	71	8.5	31	16	.53	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1947-75

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
152	351	794	1230	1900	2510	3200

WEIGHTED SKEW = -0.055

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1948-67

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	1.4	.20	.02	.00	-----	-----
3	1.6	.30	.06	.00	-----	-----
7	2.0	.55	.26	.13	-----	-----
14	3.0	1.0	.57	.33	-----	-----
30	4.8	2.5	1.6	1.1	-----	-----
60	6.2	3.7	2.9	2.3	-----	-----
90	7.7	4.4	3.2	2.4	-----	-----
120	8.8	5.5	4.2	3.4	-----	-----
183	11	7.3	6.0	5.2	-----	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1947-67

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	315	572	714	852	-----	-----
3	276	507	638	769	-----	-----
7	216	412	532	664	-----	-----
15	168	325	429	546	-----	-----
30	125	242	325	428	-----	-----
60	88	163	219	293	-----	-----
90	68	120	159	211	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1947-67

DISCHARGE, IN CFS, WHICH WAS EQUALLED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
350	121	57	38	30	23	19	16	13	10	7.6	4.9	3.2	1.2	.61	.35	.11

06123500 MUSSELSHELL RIVER NEAR RYEGATE, MT

LOCATION.--Lat 46°18'02", long 109°12'20", in center of S½ sec.3, T.6 N., R.20 E., Golden Valley County, Hydrologic Unit 10040201, on downstream side of county bridge 2 mi (3 km) upstream from Careless Creek and 2 mi (3 km) east of Ryegate.

DRAINAGE AREA.--1,979 mi² (5,126 km²).

PERIOD OF RECORD.--July 1946 to Sept. 30, 1979. Monthly discharge only for July 1946, published in WSP 1309.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Nonrecording and crest-stage gage. Datum of gage is 3,535.26 ft (1,092.787 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to June 23, 1967, water-stage recorder at site 1 mi (2 km) downstream at different datum.

REMARKS.--Some regulation by Bair and Martinsdale Reservoirs. Water is diverted on left bank in sec.8, T.7 N., R.17 E., for storage in Deadman's Basin Reservoir, and can be returned to the stream by canal at a point about 9 mi (14 km) above station or through Careless Creek 2 mi (3 km) below station. Diversions for irrigation of about 45,000 acres (182 km²) above station, of which 2,700 acres (10.9 km²) is flood irrigated.

AVERAGE DISCHARGE.--33 years (1946-79), 188 ft³/s (5.324 m³/s), 136,200 acre-ft/yr (168 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,500 ft³/s (269 m³/s) June 16, 1967, gage height, 11.8 ft (3.60 m), from floodmark at site and datum then in use; maximum gage height, 12.3 ft (3.75 m) June 21, 1975, from floodmark; no flow Aug. 17-28, 1946.

MONTHLY AND ANNUAL MEAN DISCHARGES 1947-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	193	3.1	60	47	.79	2.6
NOVEMBER	189	11	67	45	.67	3.0
DECEMBER	255	8.7	67	57	.85	3.0
JANUARY	175	6.6	56	38	.69	2.5
FEBRUARY	217	8.8	76	49	.65	3.4
MARCH	620	17	162	155	.96	7.2
APRIL	627	18	175	172	.99	7.7
MAY	1820	46	442	404	.92	19.6
JUNE	3430	76	673	725	1.08	29.9
JULY	1390	70	256	261	1.02	11.4
AUGUST	346	30	132	65	.49	5.8
SEPTEMBER	289	5.2	89	65	.73	3.9
ANNUAL	568	35	188	119	.64	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1948-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	14	6.5	4.4	3.2	2.2	-----
3	15	7.3	4.9	3.5	2.4	-----
7	17	8.0	5.4	3.8	2.6	-----
14	20	9.0	5.8	4.0	2.6	-----
30	25	12	7.4	5.0	3.1	-----
60	35	17	11	7.8	5.1	-----
90	40	20	14	10	6.9	-----
120	43	23	16	12	8.3	-----
183	54	30	21	15	11	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1947-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
560	1250	2800	4370	7000	9600	12700

WEIGHTED SKEW = 0.154

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1947-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1210	2700	4040	6110	7930	-----
3	1100	2370	3470	5130	6540	-----
7	943	2010	2890	4170	5230	-----
15	772	1620	2310	3320	4150	-----
30	628	1280	1810	2580	3220	-----
60	458	911	1290	1850	2330	-----
90	376	716	995	1400	1750	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1947-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1790	769	435	272	205	150	116	87	63	46	33	20	13	8.4	6.5	4.7	1.8

06125700 BIG COULEE NEAR LAVINA, MT

LOCATION.--Lat 46°15'53", long 108°56'50", on SE¼ sec.15, T.6 N.,R.22 E., Golden Valley County, Hydrologic Unit 10040201, on left bank 2 mi (3 km) upstream from mouth and 2 mi (3 km) southwest of Lavina.

DRAINAGE AREA.--232 mi² (601 km²).

PERIOD OF RECORD.--August 1957 to June 1972.

GAGE.--Water-stage recorder. Altitude of gage is 3,480 ft (1,061 m), from topographic map.

REMARKS.--Minor flood irrigation in headwaters.

AVERAGE DISCHARGE.--14 years (1957-71), 7.37 ft³/s (0.209 m³/s), 5,340 acre-ft/yr (6.58 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge 2,400 ft³/s (68.0 m³/s) June 18, 1967, gage height, 6.88 ft (2.097 m); no flow at times most years.

MONTHLY AND ANNUAL MEAN DISCHARGES 1958-71

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	9.7	.51	3.1	3.4	1.09	3.5
NOVEMBER	9.0	.22	3.0	3.1	1.04	3.4
DECEMBER	7.2	.30	2.4	2.5	1.03	2.7
JANUARY	6.4	.07	1.9	2.0	1.06	2.2
FEBRUARY	14	.13	3.3	4.1	1.23	3.7
MARCH	54	.76	11	14	1.26	12.9
APRIL	14	.66	6.1	4.2	.69	6.9
MAY	63	.79	9.8	16	1.62	11.1
JUNE	297	.75	33	77	2.36	37
JULY	32	.65	7.9	9.6	1.21	9.0
AUGUST	14	.41	3.7	4.6	1.22	4.2
SEPTEMBER	9.0	.41	3.0	3.2	1.06	3.4
ANNUAL	31	.57	7.4	8.1	1.1	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1959-72

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.25	.00	.00	.00	-----	-----
3	.28	.00	.00	.00	-----	-----
7	.30	.00	.00	.00	-----	-----
14	.40	.00	.00	.00	-----	-----
30	.61	.17	.08	.04	-----	-----
60	.98	.34	.19	.11	-----	-----
90	1.1	.43	.25	.16	-----	-----
120	1.3	.50	.31	.21	-----	-----
183	1.4	.61	.40	.28	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1958-72

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
37	131	464	868	1650	2460	3490

WEIGHTED SKEW = 0.142

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1958-71

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	55	195	383	795	-----	-----
3	42	153	295	583	-----	-----
7	33	117	217	402	-----	-----
15	24	83	157	304	-----	-----
30	17	57	105	202	-----	-----
60	12	37	65	118	-----	-----
90	9.9	28	48	84	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1958-71

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
89	19	13	9.9	7.9	5.2	3.5	2.2	1.6	1.2	.79	.53	.32	.15	.10	.10	.10

06126500 MUSSELSHELL RIVER NEAR ROUNDUP, MT

LOCATION.--Lat 46°25'48", long 108°34'18", in NW¼SE¼SE¼ sec.22, T.8 N., R.25 E., Musselshell County, Hydrologic Unit 10040202, on left bank 20 ft (6 m) downstream from Halfbreed Creek, 0.1 mi (0.2 km) upstream from bridge on U.S. Highway 87, and 2.0 mi (3.2 km) southwest of Roundup.

DRAINAGE AREA.--4,023 mi² (10,420 km²).

PERIOD OF RECORD.--May 1946 to current year. Monthly discharge only for October 1947 to September 1949, published in WSP 1309.

REVISED RECORDS.--WSP 1086: 1946. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,188.15 ft (971.748 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Sept. 26, 1949, nonrecording gage at present site and datum.

REMARKS.--Some regulation by Bair, Martinsdale, and Deadman's Basin Reservoirs. Diversions for irrigation of about 59,600 acres (241 km²) above station, of which about 11,000 acres (44.5 km²) is flood irrigated.

AVERAGE DISCHARGE.--33 years (1946-79), 228 ft³/s (6.457 m³/s), 165,200 acre-ft/yr (204 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,610 ft³/s (272 m³/s) June 18, 1967, gage height, 12.45 ft (3.795 m); maximum gage height, 13.73 ft (4.185 m) Mar. 9, 1979 (ice jam); minimum discharge, 0.60 ft³/s (0.017 m³/s) May 12, 1962, gage height, 0.63 ft (0.192 m); minimum gage height, 0.23 ft (0.070 m) July 31, 1977.

MONTHLY AND ANNUAL MEAN DISCHARGES 1947-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	233	8.4	77	59	.77	2.8
NOVEMBER	214	15	79	51	.65	2.9
DECEMBER	283	11	77	62	.81	2.8
JANUARY	222	6.6	67	46	.68	2.4
FEBRUARY	414	15	103	81	.79	3.7
MARCH	1280	19	258	294	1.14	9.4
APRIL	788	29	239	220	.92	6.7
MAY	1810	46	470	416	.88	17.2
JUNE	4320	48	744	830	1.12	27.2
JULY	1310	88	301	262	.87	11
AUGUST	477	49	195	93	.48	7.1
SEPTEMBER	362	8.1	128	80	.63	4.7
ANNUAL	608	49	228	136	.60	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1948-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	17	6.7	4.1	2.7	1.6	-----
3	19	7.8	4.9	3.3	2.1	-----
7	22	9.2	5.7	3.9	2.5	-----
14	25	11	7.4	5.2	3.5	-----
30	33	16	11	8.1	5.7	-----
60	42	23	16	12	9.1	-----
90	50	27	20	15	11	-----
120	54	30	22	17	12	-----
183	70	39	27	20	14	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1946-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
949	1800	3500	4990	7330	9430	11900

WEIGHTED SKEW = 0.114

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1947-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1400	2880	4200	6280	8140	-----
3	1210	2560	3780	5710	7440	-----
7	1040	2180	3180	4730	6080	-----
15	835	1750	2560	3820	4940	-----
30	677	1370	1960	2860	3650	-----
60	507	977	1370	1980	2500	-----
90	434	811	1120	1580	1980	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1947-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
2000	852	534	356	273	199	150	112	82	61	44	29	19	11	7.2	5.8	3.5

BEST DOCUMENT AVAILABLE

06127500 MUSSELSHELL RIVER AT MUSSELSHELL, MT

LOCATION.--Lat 46°31'23", long 108°06'30", in S½SW¼ sec.20, T.9 N., R.29 E., Musselshell County, Hydrologic Unit 10040202, on left bank 0.9 mi (1.4 km) upstream from Hawk Creek, and 1 mi (2 km) west of Musselshell.

DRAINAGE AREA.--4,568 mi² (11,831 km²).

PERIOD OF RECORD.--August 1928 to September 1932 (no records December to February for the water years 1930-31), August 1945 to September 1979. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,984.72 ft (909.743 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Oct. 8, 1949, nonrecording gage at site 1 mi (2 km) downstream at different datums.

REMARKS.--Some regulation by Bair, Martinsdale, and Deadman's Basin Reservoirs. Diversions for irrigation of about 63,300 acres (256 km²) above station, of which about 12,500 acres (50.6 km²) is flood irrigated.

AVERAGE DISCHARGE.--36 years (1928-29, 1931-32, 1945-79), 216 ft³/s (6.117 m³/s), 156,500 acre-ft/yr (193 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,850 ft³/s (279 m³/s) June 19, 1967, gage height, 11.57 ft (3.527 m); maximum gage height, 12.96 ft (3.950 m) Mar. 10, 1979 (ice jam); no flow at times.

MONTHLY AND ANNUAL MEAN DISCHARGES 1929, 1932, 1946-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	260	.00	76	62	.82	2.9
NOVEMBER	236	.00	79	55	.70	3.0
DECEMBER	269	.00	77	60	.78	3.0
JANUARY	222	.00	68	47	.69	2.6
FEBRUARY	460	.04	105	87	.83	4.0
MARCH	1360	13	285	315	1.11	11
APRIL	859	18	246	231	.94	9.5
MAY	1670	30	436	418	.96	16.8
JUNE	4220	44	696	782	1.12	26.8
JULY	1380	27	265	281	1.06	10.2
AUGUST	448	1.2	147	93	.63	5.7
SEPTEMBER	336	.07	115	83	.72	4.4
ANNUAL	609	34	216	140	.65	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1932, 1947-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	16	6.0	2.8	1.3	.50	-----
3	18	7.0	3.5	1.8	.70	-----
7	20	8.0	4.0	2.0	.80	-----
14	24	9.5	4.7	2.2	.80	-----
30	32	15	8.0	4.2	1.7	-----
60	44	23	14	7.5	3.4	-----
90	50	27	17	10	5.0	-----
120	54	30	19	12	6.5	-----
183	71	37	23	15	7.5	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1929-76

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
811	1630	3370	4990	7660	10100	13100

WEIGHTED SKEW = 0.151

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1929, 1932, 1946-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1490	3120	4500	6570	8320	-----
3	1270	2710	3970	5900	7580	-----
7	1070	2290	3540	4930	6280	-----
15	846	1790	2610	3840	4890	-----
30	651	1340	1930	2810	3560	-----
60	478	960	1370	1980	2510	-----
90	403	788	1110	1590	1990	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1929, 1932, 1946-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1940	852	495	331	251	180	137	104	77	56	40	24	12	2.4	.10	.10	.10

06127900 FLATWILLOW CREEK NEAR FLATWILLOW, MT

LOCATION.--Lat 46°48', long 108°37', in NE¼ sec.19, T.12 N., R.25 E., Petroleum County, Hydrologic Unit 10040203, 10 mi (16 km) southwest of Flatwillow and 14 mi (23 km) upstream from Pike Creek.

DRAINAGE AREA.--188 mi^2 (487 km^2). At site used prior to Apr. 17, 1918, 202 mi^2 (523 km^2).

PERIOD OF RECORD.--May 1911 to September 1932, February 1934 to September 1956. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1912, 13, 1917, 1927, 1939 (monthly runoff). WSP 1729: Drainage area.

GAGE.--Nonrecording gage and masonary control. Altitude of gage is 3,560 ft (1,085 m), by barometer. Prior to Apr. 17, 1918, nonrecording gage at site 5 mi (8 km) downstream at different datum. Apr. 17, 1918, to Apr. 15, 1925, nonrecording gage at present site at different datum. Apr. 16, 1925, to Sept. 30, 1932, nonrecording gage at site 300 ft (91 m) upstream at different datum.

REMARKS.--Diversions for irrigation of about 9,000 acres (36.4 km^2) above station. Diversion for irrigation increased about 1930 and reduced average flow past station.

AVERAGE DISCHARGE.--19 years (1911-30), 46.2 ft^3/s (1.308 m^3/s), 33,450 acre-ft/yr (41.3 hm^3/yr); 24 years (1930-32, 1934-56), 14.3 ft^3/s (0.405 m^3/s), 10,350 acre-ft/yr (12.8 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 954 ft^3/s (27.0 m^3/s) June 4-11, 1917; no flow at times.

MONTHLY AND ANNUAL MEAN DISCHARGES 1912-32, 1935-56

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	52	.00	14	15	1.11	4.0
NOVEMBER	51	.00	15	15	.97	4.4
DECEMBER	45	.00	13	13	.94	3.9
JANUARY	41	.00	12	11	.93	3.4
FEBRUARY	53	.00	14	13	.94	4.0
MARCH	79	.00	25	20	.81	7.3
APRIL	163	.00	45	43	.96	13.3
MAY	495	.00	64	91	1.44	18.6
JUNE	675	.00	81	116	1.43	23.8
JULY	130	.00	35	37	1.06	10.1
AUGUST	122	.00	14	22	1.63	4.0
SEPTEMBER	58	.00	10	14	1.37	3.0
ANNUAL	134	.00	29	26	.93	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1913-32, 1935-56

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.00	.00	.00	.00	-----	-----
3	.00	.00	.00	.00	-----	-----
7	.00	.00	.00	.00	-----	-----
14	.03	.00	.00	.00	-----	-----
30	.24	.00	.00	.00	-----	-----
60	1.1	.00	.00	.00	-----	-----
90	4.2	.07	.00	.00	-----	-----
120	5.8	.50	.01	.00	-----	-----
183	10	1.9	.04	.00	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1911-56

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
70	152	317	458	671	854	1060

WEIGHTED SKEW = -0.187

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1912-32, 1935-56

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	145	292	417	604	-----	-----
3	123	257	379	574	-----	-----
7	105	232	351	546	-----	-----
15	92	208	313	481	-----	-----
30	75	175	266	409	-----	-----
60	59	137	206	309	-----	-----
90	50	115	170	252	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1912-32, 1935-56

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
254	113	68	50	40	28	20	13	7.2	3.4	.10	.10	.10	.10	.10	.10	.10

BEST DOCUMENT AVAILABLE

06127900 FLATWILLOW CREEK NEAR FLATWILLOW, MT--Continued

PERIOD OF RECORD.--1930-32, 1935-56.

REMARKS.--Data below based on record after increased diversion activity for irrigation in 1930.

MONTHLY AND ANNUAL MEAN DISCHARGES 1930-32, 1935-56

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	32	.00	3.9	7.6	1.93	2.3
NOVEMBER	24	.00	5.5	6.2	1.13	3.2
DECEMBER	26	.00	5.3	5.9	1.1	3.1
JANUARY	18	.00	4.8	5.3	1.09	2.8
FEBRUARY	53	.00	7.5	11	1.51	4.3
MARCH	51	.00	12	13	1.04	7.2
APRIL	91	.00	25	28	1.12	14.4
MAY	200	.00	27	42	1.57	15.5
JUNE	244	.00	53	75	1.43	30.4
JULY	89	.00	22	28	1.3	12.6
AUGUST	27	.00	4.8	8.6	1.78	2.8
SEPTEMBER	20	.00	2.4	5.1	2.1	1.4
ANNUAL	64	.00	14	16	1.08	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1931-32, 1935-56

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT 2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	-----	-----	-----	-----	-----	-----
3	-----	-----	-----	-----	-----	-----
7	-----	-----	-----	-----	-----	-----
14	-----	-----	-----	-----	-----	-----
30	-----	-----	-----	-----	-----	-----
60	-----	-----	-----	-----	-----	-----
90	-----	-----	-----	-----	-----	-----
120	-----	-----	-----	-----	-----	-----
183	-----	-----	-----	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
--	--	--	--	--	--	--

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1930-32, 1935-56

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT 2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	97	210	320	510	-----	-----
3	82	190	300	470	-----	-----
7	66	158	250	430	-----	-----
15	57	136	218	355	-----	-----
30	43	108	172	290	-----	-----
60	31	76	120	200	-----	-----
90	26	64	99	155	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1930-32, 1935-56

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
181	67	37	23	17	10	6.2	3.9	1.8	.10	.00	.00	.00	.00	.00	.00	.00

PERIOD OF RECORD.--1912-30.

REMARKS.--Data below based on period of record prior to increased diversion activity for irrigation.

MONTHLY AND ANNUAL MEAN DISCHARGES 1912-30

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	52	10	27	12	.46	4.8
NOVEMBER	51	8.8	28	12	.44	5.0
DECEMBER	45	8.0	24	11	.45	4.3
JANUARY	41	8.0	21	9.5	.46	3.7
FEBRUARY	40	8.0	22	9.3	.42	4.0
MARCH	79	17	41	15	.38	7.3
APRIL	163	23	74	44	.60	13.2
MAY	495	10	111	114	1.03	19.9
JUNE	675	1.6	115	149	1.29	20.7
JULY	130	.78	50	40	.81	8.9
AUGUST	122	.05	25	29	1.17	4.4
SEPTEMBER	58	2.0	20	16	.77	3.7
ANNUAL	134	15	46	27	.57	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
--	--	--	--	--	--	--

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1913-30

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	6.1	.75	.00	.00	-----	-----
3	7.0	.83	.00	.00	-----	-----
7	7.5	1.2	.25	.00	-----	-----
14	9.5	1.8	.47	.00	-----	-----
30	12	3.5	1.2	.10	-----	-----
60	17	4.6	1.5	.47	-----	-----
90	16	7.0	4.0	2.3	-----	-----
120	20	9.1	5.4	3.3	-----	-----
183	21	12	8.5	6.2	-----	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1912-30

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	195	338	464	666	-----	-----
3	173	314	434	617	-----	-----
7	154	293	418	619	-----	-----
15	136	263	381	576	-----	-----
30	116	224	327	504	-----	-----
60	97	180	258	386	-----	-----
90	85	154	214	309	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1912-30

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
316	151	100	73	57	43	34	29	24	19	15	7.7	2.8	.44	.10	.10	.10

06128200 FLATWILLOW CREEK NEAR WINNETT, MT

LOCATION.--Lat 46°56', long 108°12', in NW¼NE¼ sec.32, T.14 N., R.28 E., Petroleum County, Hydrologic Unit 10040203, 8 mi (13 km) upstream from Box Elder Creek and 8.5 mi (13.7 km) southeast of Winnett.

DRAINAGE AREA.--642 mi^2 (1,663 km^2). At site used 1921-32 (at Petrolia), 660 mi^2 (1,709 km^2).

PERIOD OF RECORD.--June 1921 to November 1929, March to December 1930, February to December 1931, March to September 1932, April 1948 to October 1951. Monthly discharge only for some periods, published in WSP 1309. Published as at "Petrolia" 1921-32.

REVISED REOCRDS.--WSP 1309: 1922, 1923(M), 1924-27, 1929. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 2,790 ft (850 m), by barometer. June 11, 1921, to September 1932, nonrecording gage at site 6 mi (10 km) downstream at datum about 90 ft (27 m) lower.

REMARKS.--Diversions for irrigation of about 13,000 acres (52.6 km^2) above station. Storage in Petrolia Reservoir, 3 mi (5 km) upstream, began in July 1951.

AVERAGE DISCHARGE.--11 years (1921-29, 1948-51), 44.4 ft^3/s (1.257 m^3/s), 32,140 acre-ft per year (39.6 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 3,770 ft^3/s (107 m^3/s) July 5, 1923, gage height, 12.94 ft (3.944 m), site and datum then in use, from rating curve extended above 300 ft^3/s (8.50 m^3/s); no flow at times.

MONTHLY AND ANNUAL MEAN DISCHARGES 1922-29, 1949-51

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	87	.00	20	26	1.31	3.7
NOVEMBER	70	.00	19	21	1.08	3.6
DECEMBER	50	.00	17	15	.88	3.3
JANUARY	41	.00	15	13	.87	2.9
FEBRUARY	35	.60	16	11	.73	2.9
MARCH	145	8.0	64	42	.65	12
APRIL	203	9.6	54	55	1.01	10.1
MAY	447	.53	85	135	1.58	16.1
JUNE	481	.00	144	183	1.27	27.1
JULY	510	.07	70	149	2.12	13.2
AUGUST	126	.00	16	38	2.3	3.1
SEPTEMBER	66	.00	10	20	2.02	1.9
ANNUAL	117	4.4	44	41	.93	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1923-51

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
149	450	1350	2400	4410	6540	9310

WEIGHTED SKEW = -0.014

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1923-29, 1949-51

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.00	.00	.00	-----	-----	-----
3	.00	.00	.00	-----	-----	-----
7	.00	.00	.00	-----	-----	-----
14	.00	.00	.00	-----	-----	-----
30	.00	.00	.00	-----	-----	-----
60	1.2	.00	.00	-----	-----	-----
90	3.0	.00	.00	-----	-----	-----
120	4.5	.15	.00	-----	-----	-----
183	8.0	1.3	.3	-----	-----	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1922-29, 1949-51

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	339	1050	1990	-----	-----	-----
3	249	847	1720	-----	-----	-----
7	175	573	1130	-----	-----	-----
15	138	443	854	-----	-----	-----
30	113	337	610	-----	-----	-----
60	82	234	411	-----	-----	-----
90	67	188	325	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1922-29, 1949-51

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
518	163	94	68	52	32	21	14	6.5	3.2	.14	.10	.00	.00	.00	.00	.00

06129000 BOX ELDER CREEK NEAR WINNETT, MT

LOCATION.--Lat 47°00'45", long 108°09'30", in SW¼ sec.34, T.15 N, R.28 E., Petroleum County, Hydrologic Unit 10040204, on right bank 500 ft (152 m) upstream from bridge on State Highway 20, 0.4 mi (0.6 km) upstream from McDonald Creek, 7 mi (11 km) upstream from mouth, and 9 mi (14 km) east of Winnett.

DRAINAGE AREA.--684 mi² (1,772 km²).

PERIOD OF RECORD.--June 1930 to December 1932, February 1934 to September 1936, April to August 1937, March to September 1938, August 1958 to June 1972. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Nonrecording gage. Altitude of gage is 2,720 ft (829 m), by barometer. Prior to Aug. 22, 1958, nonrecording gages 1,500 ft (457 m) downstream at different datums.

REMARKS.--Some tributary diversion for storage and irrigation.

AVERAGE DISCHARGE.--17 years (1930-32, 1934-36, 1958-71), 23.0 ft³/s (0.651 m³/s), 16,660 acre-ft/yr (20.5 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,910 ft³/s (281 m³/s) July 16, 1962, gage height, 15.34 ft (4.676 m); no flow on many days each year.

MONTHLY AND ANNUAL MEAN DISCHARGES 1931-32, 1935-36, 1959-71

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	7.0	.00	.45	1.7	3.77	.20
NOVEMBER	1.1	.00	.16	.28	1.79	.10
DECEMBER	1.9	.00	.26	.48	1.66	.10
JANUARY	2.5	.00	.36	.71	1.97	.10
FEBRUARY	206	.00	21	52	2.44	7.8
MARCH	104	.00	50	62	1.24	18.1
APRIL	134	.00	15	32	2.16	5.3
MAY	513	.00	68	130	1.91	24.6
JUNE	625	.00	103	188	1.83	37.1
JULY	129	.00	15	31	2.09	5.3
AUGUST	19	.00	3.4	6.3	1.89	1.2
SEPTEMBER	.66	.00	.14	.22	1.58	.00
ANNUAL	60	.10	23	19	.82	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1932, 1935-36, 1960-72

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT 2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.00	.00	.00	.00	-----	-----
3	.00	.00	.00	.00	-----	-----
7	.00	.00	.00	.00	-----	-----
14	.00	.00	.00	.00	-----	-----
30	.00	.00	.00	.00	-----	-----
60	.00	.00	.00	.00	-----	-----
90	.00	.00	.00	.00	-----	-----
120	.00	.00	.00	.00	-----	-----
183	.05	.00	.00	.00	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1931-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT 1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
490	1120	2600	4040	6510	8940	11700

WEIGHTED SKEW = -0.244

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1931-32, 1935-36, 1959-71

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT 2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	976	2350	3040	3570	-----	-----
3	722	1740	2260	2680	-----	-----
7	469	1120	1460	1730	-----	-----
15	273	663	881	1070	-----	-----
30	166	382	493	585	-----	-----
60	101	227	286	332	-----	-----
90	71	159	200	231	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1931-32, 1935-36, 1959-71

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME 1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
512	85	26	10	4.4	1.1	.33	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

06129500 MCDONALD CREEK AT WINNETT, MT

LOCATION.--Lat 47°00', long 108°02', in NE¼ sec.6, T.14 N., R.27 E., Petroleum County, Hydrologic Unit 10040204, at Winnett, 12 mi (19 m) upstream from confluence with Box Elder Creek.

DRAINAGE AREA.--421 mi² (1,090 km²).

PERIOD OF RECORD.--April 1930 to December 1931, March to December 1932, February 1934 to September 1945, February 1953 to September 1956, water years 1957-60 (annual maximum). Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1941(M). WSP 1729: Drainage Area.

GAGE.--Crest-stage gage 1957-60. Altitude of gage is 2,930 ft (893 m), by barometer. April 18, 1930, to December 5, 1932, and February 4, 1934, to September 30, 1945, nonrecording gages at sites within 1 mi (2 km) of present site at different datums. February 1, 1953, to September 30, 1956, nonrecording gage and sharp crested weir at same site and datum.

REMARKS.--Small reservoirs in headwaters. Diversions for irrigation of several thousand acres above station.

AVERAGE DISCHARGE.--15 years (1930-32, 1934-45, 1953-60), 13.1 ft³/s (0.371 m³/s), 9,480 acre-ft per year (11.7 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 900 ft³/s (25.5 m³/s) May 15 or 16, 1942, gage height, 8.48 ft (2.585 m), from floodmark, present site and datum; no flow at times.

MONTHLY AND ANNUAL MEAN DISCHARGES 1931, 1935-45, 1954-56

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	9.1	.00	2.0	3.3	1.66	1.3
NOVEMBER	15	.00	2.9	5.0	1.71	1.8
DECEMBER	11	.00	2.7	4.5	1.7	1.7
JANUARY	10	.00	2.2	3.8	1.72	1.4
FEBRUARY	65	.00	7.0	16	2.37	4.4
MARCH	45	.01	12	14	1.16	7.5
APRIL	52	.01	13	18	1.45	8.0
MAY	227	.01	22	58	2.71	13.7
JUNE	306	.00	65	114	1.74	41.5
JULY	104	.00	22	34	1.54	14.2
AUGUST	29	.00	4.3	8.7	2.03	2.7
SEPTEMBER	12	.00	2.8	4.8	1.75	1.8
ANNUAL	57	.57	13	20	1.53	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1935-45, 1954-56

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.00	.00	.00	.00	-----	-----
3	.00	.00	.00	.00	-----	-----
7	.00	.00	.00	.00	-----	-----
14	.00	.00	.00	.00	-----	-----
30	.00	.00	.00	.00	-----	-----
60	.00	.00	.00	.00	-----	-----
90	.10	.06	.00	.00	-----	-----
120	.20	.01	.00	.00	-----	-----
183	.35	.03	.00	.00	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1931-75

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
171	351	744	1130	1760	2300	2900

WEIGHTED SKEW = -0.005

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1931, 1935-45, 1954-56

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	169	421	609	839	-----	-----
3	124	345	545	837	-----	-----
7	77	245	436	784	-----	-----
15	45	168	340	733	-----	-----
30	28	108	233	553	-----	-----
60	16	64	141	347	-----	-----
90	12	46	101	253	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1931, 1935-45, 1954-56

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
271	53	21	13	9.4	3.3	.58	.25	.14	.10	.00	.00	.00	.00	.00	.00	.00

06130500 MUSSELSHELL RIVER AT MOSBY, MT

LOCATION.--Lat 46°59'41", long 107°53'18", in NW¼NW¼ sec.11, T.14 N., R.30 E., Petroleum County, Hydrologic Unit 10040205, near center of downstream side of bridge on State Highway 20, 0.3 mi (0.5 km) west of Mosby, 10.9 mi (17.5 km) downstream from Flatwillow Creek, and at mile 60.0 (96.5 km).

DRAINAGE AREA.--7,846 mi^2 (20,321 km^2).

PERIOD OF RECORD.--May to November 1929, March 1930 to September 1932, February 1934 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1559: 1935-36. WSP 1729: Drainage area.

GAGE.--Nonrecording gage. Datum of gage is 2,493.38 ft (759.982 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Dec. 6, 1962, to Mar. 14, 1966, water-stage recorder at site 900 ft (274 m) downstream at different datum. Mar. 15, 1966, to Dec. 11, 1973, water-stage recorder and nonrecording gages at site 100 ft (30 m) downstream at same datum. See WSP 2116 for history of changes prior to 1962.

REMARKS.--Some regulation by Bair, Martinsdale, and Deadmans Basin Reservoirs. Diversions for irrigation of about 103,000 acres (417 km^2) above station.

AVERAGE DISCHARGE.--47 years (1930-32, 1934-79), 297 ft^3/s (8.411 m^3/s), 215,200 acre-ft/yr (265 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,000 ft^3/s (510 m^3/s) June 18, 1944, gage height, 14.43 ft (4.307 m); maximum gage height, 15.1 ft (4.60 m) Mar. 12, 1979, from floodmark (backwater from ice jam); no flow at times.

MONTHLY AND ANNUAL MEAN DISCHARGES 1931-32, 1935-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	304	.00	70	74	1.06	2.0
NOVEMBER	280	.00	77	69	.90	2.2
DECEMBER	278	.00	75	68	.90	2.1
JANUARY	310	.00	71	64	.90	2.0
FEBRUARY	1660	.00	189	324	1.72	5.3
MARCH	4660	.00	570	933	1.64	16
APRIL	1920	3.1	353	411	1.16	9.9
MAY	3770	.00	586	786	1.34	16.5
JUNE	4970	1.9	1010	1110	1.11	28.3
JULY	2150	.00	349	475	1.36	9.8
AUGUST	465	.00	109	109	1.0	3.1
SEPTEMBER	733	.00	105	127	1.21	3.0
ANNUAL	1090	16	297	250	.84	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1931-32, 1935-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	1.4	.00	.00	.00	.00	.00
3	2.0	.00	.00	.00	.00	.00
7	3.0	.00	.00	.00	.00	.00
14	5.0	.00	.00	.00	.00	.00
30	15	.10	.00	.00	.00	.00
60	33	2.0	.00	.00	.00	.00
90	42	7.0	.04	.00	.00	.00
120	63	16	6.0	2.0	.50	.00
183	100	38	20	10	2.8	1.0

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1929-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1870	4090	8900	13300	20500	27000	34600

WEIGHTED SKEW = -0.021

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1931-32, 1935-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	3350	7330	10600	15200	19000	22900
3	2650	5910	8550	12200	15100	18000
7	2060	4710	6790	9580	11700	13700
15	1580	3600	5120	7060	8450	9750
30	1130	2520	3580	4940	5920	6870
60	755	1720	2470	3460	4210	4940
90	589	1350	1950	2770	3390	4010

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1931-32, 1935-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
3780	1330	677	426	292	183	125	90	62	41	19	.00	.00	.00	.00	.00	.00

06130700 SAND CREEK NEAR JORDAN, MT

LOCATION.--lat 47°15'09", long 106°50'54", in NW¼NW¼NW¼ sec.11, T.17 N., R.38 E., Garfield County, Hydrologic Unit 10040105, on right bank 200 ft (61 m) upstream from highway bridge, 5 mi (8 km) southeast of Jordan, and 7 mi (11 km) upstream from confluence with Big Dry Creek.

DRAINAGE AREA.--317 mi² (821 km²).

PERIOD OF RECORD.--August 1957 to September 1967.

REVISED RECORDS.--WSP 1916: 1959.

GAGE.--Water-stage recorder. Datum of gage is 2,586.28 ft (788.298 m) National Geodetic Vertical Datum of 1929

REMARKS.--There are 69 small reservoirs above station used for storage of stock water (total capacity, about 1,270 acre-ft (1.57 hm³).

AVERAGE DISCHARGE.--10 years, 5.18 ft³/s (0.147 m³/s), 3,750 acre-ft (4.62 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,410 ft³/s (125 m³/s) Mar. 17, 1959, gage height, 7.95 ft (2.423 m), from rating curve extended above 2,000 ft³/s (56.6 m³/s); maximum gage height, 9.52 ft (2.902 m) Apr. 1, 1965 (backwater from ice); no flow for many days in each year.

MONTHLY AND ANNUAL MEAN DISCHARGES 1958-67

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	.36	.00	.12	.14	1.22	.20
NOVEMBER	.69	.00	.18	.24	1.35	.30
DECEMBER	.38	.00	.11	.15	1.37	.20
JANUARY	.69	.00	.14	.22	1.56	.20
FEBRUARY	35	.00	6.1	11	1.82	9.2
MARCH	245	.28	36	76	2.09	54.7
APRIL	48	.10	6.8	15	2.19	10.3
MAY	13	.00	2.6	4.1	1.54	4.0
JUNE	34	.00	5.7	11	1.87	8.6
JULY	27	.00	8.0	11	1.43	12
AUGUST	1.3	.00	.17	.48	2.4	.30
SEPTEMBER	.39	.00	.06	.12	1.98	.10
ANNUAL	22	.08	5.5	6.1	1.09	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1959-67

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.00	.00	.00	.00	-----	-----
3	.00	.00	.00	.00	-----	-----
7	.00	.00	.00	.00	-----	-----
14	.00	.00	.00	.00	-----	-----
30	.00	.00	.00	.00	-----	-----
60	.00	.00	.00	.00	-----	-----
90	.00	.00	.00	.00	-----	-----
120	.00	.00	.00	.00	-----	-----
183	.00	.00	.00	.00	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1958-67

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
62	419	2510	6090	15100	26800	44100

WEIGHTED SKEW = -0.235

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1958-67

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	395	1090	1480	-----	-----	-----
3	253	630	809	-----	-----	-----
7	139	335	423	-----	-----	-----
15	72	175	224	-----	-----	-----
30	39	93	119	-----	-----	-----
60	21	51	66	-----	-----	-----
90	15	36	48	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1958-67

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
130	9.1	3.5	1.9	1.1	.50	.24	.10	.00	.00	.00	.00	.00	.00	.00	.00	.00

06131000 BIG DRY CREEK NEAR VAN NORMAN, MT

LOCATION.--Lat 47°20'58", long 106°21'26", in NW¼SE¼NW¼ sec.3, T.18 N., R.42 E., Garfield County, Hydrologic Unit 10040105, on left bank 900 ft (270 m) downstream from Little Dry Creek, 3.2 mi (5.1 km) northeast of Van Norman Post Office, and 26 mi (42 km) east of Jordan.

DRAINAGE AREA.--2,554 mi^2 (6,615 km^2).

PERIOD OF RECORD.--October 1939 to July 1969, July 1970 to current year (discharge measurements only, October 1947 to March 1949). Prior to July 1970, published as "Dry Creek near Van Norman".

REVISED RECORDS.--WSP 1309: 1947(M). WSP 1559: 1944(M), 1947. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 2,330 ft (710 m), by barometer. Prior to July 24, 1978, at site 400 ft (120 m) downstream at same datum.

REMARKS.--Few small diversions for irrigation of hay meadows above station.

AVERAGE DISCHARGE.--36 years (1939-47, 1949-68, 1970-79), 60.3 ft^3/s (1.708 m^3/s), 43,690 acre-ft/yr (53.9 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,600 ft^3/s (697 m^3/s) Mar. 21, 1947, gage height, 13.39 ft (4.081 m); maximum gage height, 15.26 ft (4.651 m) Mar. 21, 1947 (ice jam); no flow at times each year.

MONTHLY AND ANNUAL MEAN DISCHARGES 1940-47, 1950-68, 1971-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	32	.00	5.4	8.6	1.61	.70
NOVEMBER	14	.00	3.0	3.3	1.09	.40
DECEMBER	34	.00	3.0	6.1	2.05	.40
JANUARY	43	.00	3.0	9.5	3.18	.40
FEBRUARY	494	.00	59	122	2.06	8.2
MARCH	1760	2.8	333	531	1.59	46.1
APRIL	2040	1.1	135	374	2.77	18.6
MAY	300	.21	37	74	1.99	5.1
JUNE	552	.99	78	119	1.52	10.8
JULY	197	.00	30	49	1.65	4.1
AUGUST	367	.00	22	63	2.91	3.0
SEPTEMBER	243	.00	15	44	2.85	2.1
ANNUAL	243	2.3	60	63	1.05	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1941-47, 1950-69, 1972-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.00	.00	.00	.00	.00	-----
3	.00	.00	.00	.00	.00	-----
7	.00	.00	.00	.00	.00	-----
14	.00	.00	.00	.00	.00	-----
30	.00	.00	.00	.00	.00	-----
60	.13	.00	.00	.00	.00	-----
90	.55	.10	.01	.00	.00	-----
120	1.1	.25	.12	.00	.00	-----
183	2.2	.45	.16	.06	.00	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1940-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
940	2690	7620	12600	20800	29000	38100

WEIGHTED SKEW = -0.290

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1940-47, 1950-68, 1971-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	2110	6390	10500	17000	22400	-----
3	1430	4520	7740	13100	18000	-----
7	839	2650	4590	7950	11100	-----
15	476	1460	1460	4300	5980	-----
30	282	836	1410	2390	3310	-----
60	165	473	781	1290	1750	-----
90	119	332	540	875	1170	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1940-47, 1950-68, 1971-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1180	154	54	28	17	7.8	4.0	2.3	1.2	.56	.00	.00	.00	.00	.00	.00	.00

06132000 MISSOURI RIVER BELOW FORT PECK DAM, MT

LOCATION.--Lat 48°02'39", long 106°21'21", in NW¼ sec.6, T.26 N., R.42 E., McCone County, Hydrologic Unit 10060001, on right bank 2 mi (3 km) upstream from Milk River, 6 mi (10 km) south of Nashua, 8 mi (13 km) downstream from Fort Peck Dam, and at mile 1,763.5 (2,837.5 km).

DRAINAGE AREA.--57,556 mi^2 (149,070 km^2).

PERIOD OF RECORD.--March 1934 to current year.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,018.00 ft (615.086 m), National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). Prior to Apr. 14, 1938, at site 0.7 mi (1.1 km) upstream at different datum; Apr. 14, 1938, to Sept. 30, 1963, at present site at datum 2.00 ft (0.610 m) higher, all water-stage recorders. Since Oct. 1, 1969, published discharge is determined by flowmeters at Fort Peck Dam.

REMARKS.--Flow completely regulated by Fort Peck Lake. Diversions for irrigation of about 880,400 acres (3,360 km^2) above station.

COOPERATION.--Records since Oct. 1, 1969, furnished by Corps of Engineers; 4 discharge measurements made and records reviewed by Geological Survey. Records for March 1934 to September 1969 collected and computed by Geological Survey.

AVERAGE DISCHARGE.--5 years (1934-39, prior to Fort Peck Lake reaching operational level), 6,347 ft^3/s (179.7 m^3/s), 4,598,000 acre-ft/yr (5.67 km^3/yr); 36 years (1943-79, after operational level in Fort Peck Lake was reached), 9,934 ft^3/s (281.3 m^3/s), 7,197,000 acre-ft/yr (8.87 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 51,000 ft^3/s (1,440 m^3/s) including 32,000 ft^3/s (906 m^3/s) inflow from spillway 1 mi (2 km) downstream from station, Aug. 8, 1946; maximum gage height observed, 12.30 ft (3.749 m) Mar. 10, 1936 (ice jam), site and datum then in use; maximum daily reverse flow, 400 ft^3/s (11.3 m^3/s) Mar. 29, 1943 (backwater from Milk River).

MONTHLY AND ANNUAL MEAN DISCHARGES 1935-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	28800	1040	11600	7800	.67	10.8
NOVEMBER	19800	1100	8570	4350	.51	7.9
DECEMBER	13300	1010	7650	3550	.46	7.1
JANUARY	14000	879	7830	4140	.53	7.2
FEBRUARY	15200	1010	7730	4980	.64	7.1
MARCH	13400	814	7120	3850	.54	6.6
APRIL	17200	583	7150	3940	.55	6.6
MAY	18800	950	7830	4480	.57	7.2
JUNE	26200	685	8000	5330	.67	7.4
JULY	35000	964	9800	6270	.64	9.1
AUGUST	26200	2960	12600	6300	.50	11.7
SEPTEMBER	27100	3110	12300	7180	.58	11.4
ANNUAL	15000	3650	9030	3110	.34	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1935-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1						
3						
7	2680	1140	663	404	219	141
14	310[illegible]	1480	949	636	391	277
30	3530	1710	1110	750	470	337
60	4030	1960	1270	870	549	396
90	4620	2250	1460	963	609	433
120	5130	2550	1650	1110	684	483
183	7150	4170	2950	2150	1440	1080

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1935-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	19100	25800	29700	34000	36800	39500
3	18700	25200	28900	33100	35900	38500
7	18100	24500	28200	32600	35600	38300
15	17200	23500	27500	32400	35800	39200
30	16100	22300	26200	31100	34700	38300
60	14600	19900	23300	27500	30600	33800
90	13000	17400	20300	24100	26900	29800

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1935-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
28600	21100	16500	15100	13800	11600	9590	8040	6820	5410	3820	2000	1060	891	806	607	215

BEST DOCUMENT AVAILABLE

06132000 MISSOURI RIVER BELOW FORT PECK DAM, MT--Continued

PERIOD OF RECORD.--1943-79.

REMARKS.--Data below based on period of record after Fort Peck Lake reached operational level.

MONTHLY AND ANNUAL MEAN DISCHARGES 1943-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	28800	3370	13400	7510	.56	11.4
NOVEMBER	19800	2090	9540	3960	.41	8.1
DECEMBER	13300	1300	8630	2900	.34	7.3
JANUARY	14000	1000	9020	3520	.39	7.7
FEBRUARY	15200	1010	8910	4680	.52	7.6
MARCH	13400	814	7280	3820	.52	6.2
APRIL	17200	583	7290	3960	.54	6.2
MAY	18800	950	8100	4310	.53	6.9
JUNE	26200	685	8080	5350	.66	6.9
JULY	35000	964	10100	6630	.65	8.6
AUGUST	26200	3450	13400	6260	.47	11.4
SEPTEMBER	27100	4260	13600	6940	.51	11.6
ANNUAL	15000	4880	9800	2810	.29	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1944-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	2760	791	300	113	31	-----
3	3290	1370	710	370	158	-----
7	3580	1700	1030	634	342	-----
14	4200	2170	1380	890	508	-----
30	4750	2490	1610	1070	631	-----
60	5400	2860	1880	1260	758	-----
90	6080	3220	2090	1390	821	-----
120	6620	3630	2390	1600	959	-----
183	8220	5960	4960	4220	3490	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1943-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	18700	25900	30200	35200	38700	-----
3	18500	25600	29900	34900	38300	-----
7	18200	25200	29500	34600	38000	-----
15	17600	24700	29100	34300	38000	-----
30	16800	23500	27700	32800	36500	-----
60	15400	21000	24500	28700	31700	-----
90	13800	18300	21200	24900	27500	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1943-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
30100	22200	16800	15600	14300	12300	10400	8650	7590	6440	5050	3060	1260	930	849	612	138

06134500 MILK RIVER AT MILK RIVER, ALBERTA

(International gaging station)

LOCATION.--Lat 49°08'37", long 112°04'44", in NE¼ sec.21, T.2, R.16 W., fourth meridian, in Alberta, Hydrologic Unit 10050002, on right bank 5 ft (1.5 m) downstream from highway bridge at Milk River, Alberta, and 22 mi (35 km) downstream from North Milk River.

DRAINAGE AREA.--1,036 mi² (2,683 km²).

PERIOD OF RECORD.--June 1909 to October 1910 (no winter records), April 1911 to current year. Monthly discharge only for June 1909, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1912. WSP 1599: 1916, 1927(M), 1947(M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,402.78 ft (1,037.167 m) above mean sea level (Geodetic Surveys of Canada datum), Prior to June 17, 1919, nonrecording gages, and June 17, 1919, to Nov. 2, 1921, water-stage recorder at several sites 300 ft (91 m) upstream at datum 0.61 ft (0.186 m) higher. Nov. 3, 1921, to Aug. 28, 1947, water-stage recorder at site 60 ft (18 m) upstream at present datum. Aug. 29, 1947, to Nov. 10, 1976, water-stage recorder located 700 ft (213 m) downstream on left bank at present datum.

REMARKS.--Since 1917, flow increased during irrigation season by water from St. Mary Canal. Several small diversions for irrigation above station.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

AVERAGE DISCHARGE.--63 years (1916-79), 326 ft³/s (9.232 m³/s), 236,200 acre-ft/yr (291 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,170 ft³/s (260 m³/s) June 21, 1975, gage height, 10.58 ft (3.225 m); maximum gage height, 11.45 ft (3.490 m) Mar. 21, 1978 (backwater from ice); no flow at times.

MONTHLY AND ANNUAL MEAN DISCHARGES 1912-18, 1920-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	555	12	106	95	.90	2.8
NOVEMBER	216	10	64	44	.69	1.7
DECEMBER	133	2.1	36	26	.72	1.0
JANUARY	268	.00	33	44	1.35	.90
FEBRUARY	551	.00	62	90	1.44	1.6
MARCH	1030	3.4	219	199	.91	5.8
APRIL	1380	95	499	261	.52	13.2
MAY	1180	150	628	241	.38	16.6
JUNE	1630	71	683	247	.36	18
JULY	965	25	590	181	.31	15.6
AUGUST	795	22	532	194	.36	14
SEPTEMBER	713	21	341	219	.64	9.0
ANNUAL	489	78	317	90	.28	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1909-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1050	1870	3310	4260	6070	8000	10500

WEIGHTED SKEW = 0.192

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1912-18, 1920-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	6.2	1.5	.10	.00	.00	.00
3	7.2	1.8	.15	.01	.00	.00
7	8.5	2.0	.50	.05	.01	.00
14	9.0	2.8	1.0	.30	.05	.00
30	14	4.5	2.0	.80	.30	.01
60	21	7.5	3.5	2.0	.50	.10
90	25	10	6.0	3.5	1.5	1.0
120	32	15	9.2	5.9	3.4	2.3
183	59	32	23	17	12	9.4

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1912-18, 1920-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1670	2790	3720	5120	6340	7720
3	1450	2290	2950	3900	4690	5560
7	1190	1770	2210	2820	3310	3850
15	985	1370	1630	1980	2240	2520
30	845	1080	1220	1380	1490	1600
60	755	929	1010	1090	1140	1180
90	716	856	908	949	967	979

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1912-18, 1920-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1500	897	807	716	640	516	311	145	77	48	29	15	7.3	2.2	1.0	.10	.10

BEST DOCUMENT AVAILABLE

06138500 BIG SANDY CREEK NEAR BOX ELDER, MT

LOCATION.--Lat 48°22', long 109°59', in NE¼ sec.13, T.30 N., R.13 E., Hill County, Hydrologic Unit 10050005, just below mouth of Sage Creek at Cowan ranch and 3 mi (5 km) north of Box Elder.

DRAINAGE AREA.--1,629 mi^2 (4,219 km^2), revised.

PERIOD OF RECORD.--March 1927 to December 1938.

REVISED RECORDS.--WSP 1309: 1928, 1930.

GAGE.--Nonrecording gage. Altitude of gage is 2,620 ft (799 m), from topographic map. Prior to Mar. 7, 1928, several nonrecording gages 0.5 mi (0.8 km) upstream at different datum on spillways of Cowan dam.

REMARKS.--Flow regulated by small storage dam and some diversions for irrigation above station.

AVERAGE DISCHARGE.--11 years (1927-38), 6.59 ft^3/s (0.187 m^3/s), 4,770 acre-ft/yr (5.88 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 2,000 ft^3/s (56.6 m^3/s) May 24, 1927, gage height, 5.85 ft (1.783 m), from computation of peak flow over dam; no flow at times.

MONTHLY AND ANNUAL MEAN DISCHARGES 1928-38

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	10	.01	2.2	3.2	1.47	2.7
NOVEMBER	9.1	.10	2.5	2.9	1.13	3.2
DECEMBER	3.5	.10	1.2	1.2	1.04	1.5
JANUARY	8.0	.00	1.6	2.4	1.52	2.0
FEBRUARY	25	.00	3.5	7.2	2.05	4.5
MARCH	75	.40	13	22	1.68	16.7
APRIL	40	.30	9.9	15	1.51	12.5
MAY	51	.21	10	18	1.8	12.9
JUNE	93	.27	22	32	1.49	27.5
JULY	44	.19	6.7	13	1.95	8.5
AUGUST	36	.03	4.9	11	2.18	6.2
SEPTEMBER	8.0	.00	1.4	2.4	1.67	1.8
ANNUAL	21	.27	6.6	7.4	1.13	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1927-38

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
--	--	--	--	--	--	--

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1928-38

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.09	.00	.00	.00	-----	-----
3	.13	.00	.00	.00	-----	-----
7	.15	.00	.00	.00	-----	-----
14	.20	.01	.00	.00	-----	-----
30	.24	.03	.00	.00	-----	-----
60	.26	.05	.01	.00	-----	-----
90	.35	.08	.03	.00	-----	-----
120	.41	.12	.06	.00	-----	-----
183	.63	.17	.06	.00	-----	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1928-38

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	104	283	382	-----	-----	-----
3	89	240	325	-----	-----	-----
7	64	169	231	-----	-----	-----
15	39	108	154	-----	-----	-----
30	24	70	107	-----	-----	-----
60	14	42	67	-----	-----	-----
90	11	33	53	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1928-38

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
113	36	14	5.3	4.0	2.3	.97	.64	.50	.38	.27	.14	.00	.00	.00	.00	.00

BEST DOCUMENT AVAILABLE

06140500 MILK RIVER AT HAVRE, MT

LOCATION.--Lat 48°33'23", long 109°40'14", in NE¼SE¼SE¼ sec.5, T.32 N., R.16 E., Hill County, Hydrologic Unit 10050004, on upstream side of highway bridge on 7th Avenue East in Havre, 30 ft (9 m) downstream from Bullhook Creek, 9.4 mi (15.1 km) downstream from Big Sandy Creek, and 17 mi (27 km) downstream from Fresno Dam, and at mile 417.8 (672.2 km) (from Montana Department of Natural Resources and Conservation River Mile Index).

DRAINAGE AREA.--5,844 mi² (15,136 km²), of which 670 mi² (1,735 km²) is probably noncontributing.

PERIOD OF RECORD.--May to November 1898, April 1899 to November 1922, March, April 1923, March, April 1952 (gage heights only, in WSP 1260-B), June 1953 (in WSP 1260-B), June 1953 (in WSP 1320-B), August 1954 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1899-1900, 1902-4, 1907-8, 1909(M), 1912, 1917(M), 1920(M). WSP 1729: Drainage area.

GAGE.--Nonrecording gage read once or twice daily and crest-stage gage. Datum of gage is 2,461.11 ft (750.146 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Nov. 4, 1902, nonrecording gage at site 0.5 mi (0.8 km) upstream at different datum. Nov. 4, 1902, to Nov. 25, 1910, nonrecording gage at datum 0.47 ft (0.143 m) higher, Mar. 9, 1911, to July 13, 1920, nonrecording gage at present datum, and July 14, 1920, to Sept. 30, 1922, nonrecording gage at datum 4.00 ft (1.219 m) higher, all at site 30 ft (9 m) downstream.

REMARKS.--Bullhook Creek flood-control project is designed to bypass damaging floods to Milk River channel several miles downstream. Diversions for irrigation of about 6,000 acres (24.3 km²) above station. Since 1917, flow increased during irrigation season by water from St. Mary Canal which diverts from the St. Mary River near Babb. Flow regulated by Fresno Reservoir.

AVERAGE DISCHARGE.--17 years (water years, 1900-1916), prior to operation of St. Mary Canal, 273 ft³/s (7.731 m³/s), 197,800 acre-ft/yr (244 hm³/yr); 31 years (water years, 1917-22, 1955-79), 441 ft³/s (12.49 m³/s), 319,500 acre-ft/yr (394 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 20,000 ft³/s (566 m³/s) Apr. 12, 1899, gage height, 19.3 ft (5.88 m), present datum, from floodmarks, from rating curve extended above 5,200 ft³/s (147 m³/s); no flow at times in several years.

MONTHLY AND ANNUAL MEAN DISCHARGES 1900-22, 1955-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	474	.00	151	111	.74	3.3
NOVEMBER	325	.00	89	67	.75	1.9
DECEMBER	160	.00	57	37	.65	1.2
JANUARY	780	.00	62	112	1.8	1.4
FEBRUARY	1400	.00	94	203	2.15	2.1
MARCH	2110	5.0	355	441	1.24	7.8
APRIL	2570	59	606	580	.96	13.3
MAY	2190	61	793	451	.57	17.4
JUNE	2190	35	790	421	.53	17.3
JULY	2050	15	736	482	.65	16.1
AUGUST	1300	.00	519	387	.74	11.4
SEPTEMBER	798	.00	312	237	.76	6.8
ANNUAL	727	39	382	156	.41	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1900-22, 1956-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	22	6.0	.00	.00	.00	.00
3	25	7.5	.10	.00	.00	.00
7	31	8.0	.20	.00	.00	.00
14	32	9.0	.30	.20	.10	.10
30	37	9.5	.40	.30	.10	.10
60	46	12	2.0	.40	.10	.10
90	54	17	5.5	.40	.10	.10
120	60	23	10	1.4	.50	.50
183	89	37	19	4.3	2.0	1.0

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1952-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1230	2190	3830	5090	6860	8290	9820

WEIGHTED SKEW = -0.120

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1900-22, 1955-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	2210	4160	5840	8430	10700	13400
3	2040	3720	5100	7130	8860	10800
7	1830	3140	4090	5350	6310	7300
15	1600	2470	2980	3540	3900	4220
30	1340	1910	2170	2410	2530	2620
60	1100	1440	1560	1630	1660	1680
90	987	1290	1390	1450	1470	1480

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1900-22, 1955-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
2380	1340	1070	883	719	440	254	145	88	59	41	22	5.4	.20	.00	.00	.00

06140500 MILK RIVER AT HAVRE, MT--Continued

PERIOD OF RECORD.--1917-22, 1955-79.

REMARKS.--Data below based on period of record after St. Mary Canal began diverting from St. Mary River.

MONTHLY AND ANNUAL MEAN DISCHARGES 1917-22, 1955-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	474	9.0	174	120	.69	3.3
NOVEMBER	325	5.0	86	67	.78	1.6
DECEMBER	144	2.0	53	29	.56	1.0
JANUARY	780	.00	70	135	1.93	1.3
FEBRUARY	327	.00	66	70	1.05	1.3
MARCH	2110	5.0	293	440	1.5	5.6
APRIL	2570	89	613	614	1.0	11.6
MAY	2190	261	948	400	.42	18
JUNE	1570	233	876	296	.34	16.6
JULY	1589	283	936	325	.35	17.8
AUGUST	1300	51	735	297	.40	14
SEPTEMBER	798	33	416	205	.49	7.9
ANNUAL	727	160	441	135	.31	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1918-22, 1956-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT 2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	22	9.5	5.0	1.6	.50	-----
3	26	12	5.6	2.3	1.0	-----
7	29	15	8.0	3.0	1.1	-----
14	32	16	8.8	3.5	1.3	-----
30	37	18	9.0	3.7	1.4	-----
60	43	19	9.2	4.9	1.5	-----
90	50	20	9.4	4.4	1.6	-----
120	54	24	13	7.3	3.4	-----
183	86	42	26	17	9.9	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT 1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
--	--	--	--	--	--	--

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1917-22, 1955-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT 2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1860	3420	5000	7840	10800	-----
3	1720	3090	4480	6980	9570	-----
7	1580	2720	3790	5590	7340	-----
15	1450	2230	2850	3760	4530	-----
30	1300	1810	2140	2520	2800	-----
60	1120	1450	1620	1800	1900	-----
90	1080	1340	1450	1540	1590	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1917-22, 1955-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME 1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
2260	1380	1130	1000	873	619	384	210	99	63	47	31	18	4.9	4.1	1.0	.00

PERIOD OF RECORD.--1900-16.

REMARKS.--Data below based on period of record prior to St. Mary Canal.

MONTHLY AND ANNUAL MEAN DISCHARGES 1900-16

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	201	.00	108	79	.73	3.3
NOVEMBER	250	.00	94	67	.71	2.9
DECEMBER	160	.00	64	48	.75	1.9
JANUARY	150	.00	47	47	1.0	1.4
FEBRUARY	1400	.60	146	329	2.25	4.4
MARCH	1600	30	469	431	.92	14.3
APRIL	1740	59	593	532	.90	18.1
MAY	1620	61	511	408	.80	15.6
JUNE	2190	35	631	561	.89	19.2
JULY	2050	15	371	514	1.38	11.3
AUGUST	414	.00	126	139	1.1	3.8
SEPTEMBER	664	.00	122	164	1.34	3.7
ANNUAL	571	39	274	143	.52	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1901-16

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	-----	-----	-----	-----	-----	-----
3	-----	-----	-----	-----	-----	-----
7	-----	-----	-----	-----	-----	-----
14	-----	-----	-----	-----	-----	-----
30	-----	-----	-----	-----	-----	-----
60	-----	-----	-----	-----	-----	-----
90	-----	-----	-----	-----	-----	-----
120	-----	-----	-----	-----	-----	-----
183	-----	-----	-----	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
--	--	--	--	--	--	--

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1900-16

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	2970	5490	7120	-----	-----	-----
3	2670	4730	5930	-----	-----	-----
7	2220	3710	4480	-----	-----	-----
15	1710	2770	3300	-----	-----	-----
30	1250	2030	2430	-----	-----	-----
60	878	1350	1560	-----	-----	-----
90	703	1070	1240	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1900-16

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
2660	1090	654	467	353	221	154	108	77	53	30	6.1	.20	.00	.00	.00	.00

06143000 MILK RIVER AT LOHMAN, MT

LOCATION.--Lat 48°36', long 109°24', in SE¼ sec.20,T.33 N., R.18 E., Blaine County, Hydrologic Unit 10050004, on right bank 0.5 mi (0.8 km) downstream from Fort Belknap diversion dam, and 0.7 mi (1.1 km) north of Lohman.

DRAINAGE AREA.--6,166 mi² (15,970 km²).

PERIOD OF RECORD.--June 1918 to August 1921 (irrigation season only), October 1922 to December 1925, March 1934 to September 1951. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1923.

GAGE.--Water-stage recorder. Altitude of gage is 2,420 ft (738 m), from topographic map. Prior to Jan. 7, 1934, nonrecording gage on county bridge 0.2 mi (0.3 km) downstream at different datum.

REMARKS.--Flow increase by water from St. Mary Canal since 1917 and regulated by Fresno Dam since 1939. Diversions for irrigation of about 5,000 acres (20.2 km²) above station. Fort Belknap Canal diverts water 0.5 mi (0.8 km) above station for use below.

AVERAGE DISCHARGE.--20 years (1922-25, 1934-51), 274 ft³/s (7.760 m³/s), 198,400 acre-ft/yr (245 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,450 ft³/s (97.7 m³s) Mar. 21, 1939, gage height, 12.08 ft (3.682 m); maximum gage height, 14.63 ft (4.459 m) Mar. 22, 1947 (backwater from ice); no flow at times.

MONTHLY AND ANNUAL MEAN DISCHARGES 1923-25, 1935-51

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	406	.65	80	97	1.21	2.4
NOVEMBER	91	1.3	39	29	.73	1.2
DECEMBER	91	.50	37	25	.67	1.1
JANUARY	61	.50	25	19	.74	.80
FEBRUARY	326	1.0	51	73	1.45	1.5
MARCH	748	46	249	229	.92	7.6
APRIL	1310	42	414	323	.78	12.6
MAY	945	220	491	203	.41	15
JUNE	1240	246	627	286	.46	19.1
JULY	1070	287	546	208	.38	16.7
AUGUST	805	289	449	126	.28	13.7
SEPTEMBER	644	41	271	150	.55	8.3
ANNUAL	415	141	274	77	.28	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1924-25, 1935-51

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	6.5	.5	.10	.01	-----	-----
3	7.7	1.0	.33	.03	-----	-----
7	8.7	1.4	.39	.12	-----	-----
14	9.6	2.1	.80	.33	-----	-----
30	13	2.9	1.1	.43	-----	-----
60	21	5.7	2.3	.98	-----	-----
90	27	8.5	3.8	1.7	-----	-----
120	30	12	5.9	3.1	-----	-----
183	50	30	22	18	-----	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1923-25, 1935-51

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1570	2700	3530	4630	-----	-----
3	1440	2370	3030	3880	-----	-----
7	1260	1940	2390	2960	-----	-----
15	1010	1460	1760	2140	-----	-----
30	799	1110	1320	1590	-----	-----
60	647	865	1010	1210	-----	-----
90	596	785	908	1060	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1923-25, 1935-51

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1620	881	701	594	497	392	255	118	67	43	29	13	4.6	.95	.58	.39	.12

BEST DOCUMENT AVAILABLE

06154400 PEOPLES CREEK NEAR HAYS, MT

LOCATION.--Lat 48°13'35", long 108°42'40", in SW¼ sec.35, T.29 N., R.23 E., Blaine County, Hydrologic Unit 10050009, on right bank 45 ft (14 m) downstream from bridge on State Highway 376, 2.5 mi (4.0 km) downstream from Myrtle Creek, and 16.4 mi (26.4 km) north of Hays.

DRAINAGE AREA.--220 mi^2 (570 km^2).

PERIOD OF RECORD.--December 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,714.10 ft (827.258 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Some storage in numerous stock ponds and diversions for irrigation of about 1,300 acres (5.26 km^2) above station.

AVERAGE DISCHARGE.--12 years (water years, 1968-79), 21.0 ft^3/s (0.595 m^3/s), 15,210 acre-ft/yr (18.8 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,460 ft^3/s (240 m^3/s) June 8, 1972, gage height, 15.03 ft (4.581 m), from floodmark, from rating curve extended above 490 ft^3/s (13.9 m^3/s) on basis of slope-area measurement of peak flow; no flow at times most years.

MONTHLY AND ANNUAL MEAN DISCHARGES 1968-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	17	.00	4.8	5.3	1.1	1.9
NOVEMBER	13	.00	4.9	4.7	.96	1.9
DECEMBER	11	.00	4.3	4.1	.95	1.7
JANUARY	30	.00	7.1	9.7	1.36	2.8
FEBRUARY	75	.01	13	21	1.61	5.1
MARCH	205	2.7	56	84	1.5	22.5
APRIL	122	8.0	36	34	.94	14.5
MAY	190	2.7	64	74	1.16	25.4
JUNE	99	.46	36	35	.96	14.5
JULY	52	.00	14	17	1.23	5.6
AUGUST	21	.00	5.2	7.5	1.44	2.1
SEPTEMBER	14	.00	4.1	5.7	1.38	1.6
ANNUAL	48	2.4	21	15	.73	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1968-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.00	.00	.00	.00	-----	-----
3	.00	.00	.00	.00	-----	-----
7	.00	.00	.00	.00	-----	-----
14	.00	.00	.00	.00	-----	-----
30	.00	.00	.00	.00	-----	-----
60	.30	.00	.00	.00	-----	-----
90	.90	.00	.00	.00	-----	-----
120	1.2	.00	.00	.00	-----	-----
183	1.4	.01	.00	.00	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1967-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
140	407	1190	1960	3250	4500	6010

WEIGHTED SKEW = -0.210

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1968-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	312	678	952	-----	-----	-----
3	269	581	814	-----	-----	-----
7	201	451	651	-----	-----	-----
15	130	306	459	-----	-----	-----
30	86	200	297	-----	-----	-----
60	58	132	198	-----	-----	-----
90	48	107	157	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1968-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
292	97	49	31	20	12	8.1	5.4	2.5	.46	.10	.00	.00	.00	.00	.00	.00

06154500 PEOPLES CREEK NEAR DODSON, MT

LOCATION.--Lat 48°20'34", long 108°21'32", in SE¼NW¼ sec.21, T.30 N., R.26 E., Phillips County, Hydrologic Unit 10050009, on right bank 0.8 mi (1.3 km) upstream from Indian Service diversions, 6.5 mi (10.5 km) southwest of Dodson, and 7 mi (11 km) upstream from mouth.

DRAINAGE AREA.--670 mi^2 (1,735 km^2).

PERIOD OF RECORD.--April 1918 to November 1921 (fragmentary), June 1951 to September 1973. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 2,310 ft (704 m), by barometer. Prior to June 1951, nonrecording gage at site 2 mi (3 km) downstream at different datum. June 1, 1951, to Aug. 11, 1956, water-stage recorder at site 300 ft (91 m) downstream at present datum.

REMARKS.--Diversions for irrigation of about 3,300 acres (13.4 km^2) above station.

AVERAGE DISCHARGE.--22 years (1951-73), 32.4 ft^3/s (0.918 m^3/s), 23,470 acre-ft/yr (28.9 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,940 ft^3/s (112 m^3/s) June 9, 1972, gage height, 11.94 ft (3.639 m), from floodmark; maximum gage height, 17.05 ft (5.197 m) Mar. 29, 1952 (backwater from ice), from floodmark in gage house; no flow at times most years.

MONTHLY AND ANNUAL MEAN DISCHARGES 1952-73

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	24	.00	4.4	6.3	1.44	1.1
NOVEMBER	19	.00	4.7	5.6	1.19	1.2
DECEMBER	13	.00	3.3	4.1	1.24	.80
JANUARY	64	.00	5.4	15	2.83	1.4
FEBRUARY	369	.00	34	81	2.39	8.7
MARCH	374	.76	96	106	1.1	24.7
APRIL	521	.57	91	146	1.6	23.4
MAY	463	.34	68	110	1.62	17.4
JUNE	332	.03	55	81	1.48	14
JULY	125	.00	20	34	1.67	5.2
AUGUST	26	.00	3.6	5.9	1.63	.90
SEPTEMBER	40	.00	4.6	9.9	2.16	1.2
ANNUAL	93	1.2	32	28	.86	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1953-73

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.00	.00	.00	.00	-----	-----
3	.00	.00	.00	.00	-----	-----
7	.00	.00	.00	.00	-----	-----
14	.00	.00	.00	.00	-----	-----
30	.00	.00	.00	.00	-----	-----
60	.00	.00	.00	.00	-----	-----
90	.70	.00	.00	.00	-----	-----
120	.75	.05	.00	.00	-----	-----
183	1.3	.18	.00	.00	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1952-73

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
375	855	1940	2930	4510	5900	7470

WEIGHTED SKEW = -0.267

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1952-73

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	684	1610	2470	3850	-----	-----
3	534	1290	2000	3160	-----	-----
7	384	925	1420	2180	-----	-----
15	241	579	822	1350	-----	-----
30	152	363	546	813	-----	-----
60	98	235	351	517	-----	-----
90	75	175	256	369	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1952-73

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
569	137	59	36	23	12	6.2	2.6	.95	.16	.00	.00	.00	.00	.00	.00	.00

06155500 MILK RIVER AT MALTA, MT

LOCATION.--Lat 48°22', long 107°52', in NW sec.17, T.30 N., R.30 E., Phillips County, Hydrologic Unit 10050004, at the old highway bridge at Malta.

DRAINAGE AREA.--12,457 mi^2 (32,263 km^2).

PERIOD OF RECORD.--August 1902 to September 1922.

REVISED RECORDS.--WSP 1309: 1904, 1907, 1909, 1911-16, 1917(M), 1918-19, 1921(M), 1922.

GAGE.--Nonrecording gage. Datum of gage is 2,221.40 ft (677.083 m) National Geodetic Vertical Datum of 1929, unadjusted.

REMARKS.--Many large diversions for irrigation above station. Flow has been increased by water from the St. Mary Canal since 1917.

AVERAGE DISCHARGE.--20 years (1903-22), 449 ft^3/s (12.72 m^3/s), 325,300 acre-ft/yr (401 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 11,500 ft^3/s (327 m^3/s) Mar. 26, 27, 1918; Maximum gage height observed, 20.22 ft (6.163 m) Mar. 26, 1918; no flow at times.

MONTHLY AND ANNUAL MEAN DISCHARGES 1903-05, 1908-22

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	392	.00	147	110	.75	2.7
NOVEMBER	293	.00	119	85	.71	2.2
DECEMBER	200	.50	73	51	.71	1.3
JANUARY	1030	.00	108	236	2.19	2.0
FEBRUARY	1250	.00	163	327	2.0	3.0
MARCH	4080	40	900	1240	1.38	16.7
APRIL	6410	7.7	1830	1940	1.06	33.9
MAY	2280	3.9	733	721	.98	13.6
JUNE	2260	25	641	688	1.07	11.9
JULY	2440	.52	372	565	1.52	6.9
AUGUST	423	.00	138	131	.95	2.6
SEPTEMBER	1740	.00	175	397	2.26	3.2
ANNUAL	983	42	449	287	.64	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1903-52

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
3760	7330	13500	18100	24500	29400	34500

WEIGHTED SKEW = -0.321

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1904-06, 1908-22

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	20	5.5	.10	.00	-----	-----
3	22	6.5	.50	.00	-----	-----
7	25	8.2	1.0	.20	-----	-----
14	29	9.5	1.1	.30	-----	-----
30	33	10	1.2	.40	-----	-----
60	40	13	1.4	.50	-----	-----
90	50	13	1.5	1.0	-----	-----
120	60	15	3.5	1.1	-----	-----
183	82	29	10	2.0	-----	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1903-05, 1908-22

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	4560	8420	11000	14200	-----	-----
3	4190	7990	10600	13900	-----	-----
7	3680	7220	9680	12700	-----	-----
15	2960	5990	8220	11100	-----	-----
30	2290	4400	5780	7370	-----	-----
60	1590	2990	3800	4620	-----	-----
90	1220	2290	2890	3470	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1903-05, 1908-22

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
6030	2090	1240	738	446	260	158	102	73	53	33	13	4.3	.50	.50	.50	.50

BEST DOCUMENT AVAILABLE

06172000 MILK RIVER AT VANDALIA, MT

LOCATION.--Lat 48°21'33", long 106°54'14", in SE¼NW¼ sec.15, T.30 N., R.37 E., Valley County, Hydrologic Unit 10050012, on county bridge 0.3 mi (0.5 km) northeast of Vandalia Post Office, 0.9 mi (1.4 km) upstream from Bear Creek, 7.1 mi (11.4 km) downstream from Vandalia Dam, and at mile 105.3 (169.4 km).

DRAINAGE AREA.--20,944 mi² (54,245 km²). Area at site used prior to Oct. 1, 1969, 20,926 mi (54,198 km²).

PERIOD OF RECORD.--October 1914 to September 1925, August 1928 to September 1939, October 1969 to September 1973. April to May 1952 scattered daily elevations, published in WSP 1260-B. Monthly discharge only for some periods, published in WSP 1309. Prior to October 1969, published as "near Vandalia."

GAGE.--Nonrecording gage. Datum of gage is 2,085.00 ft (635.508 m) National Geodetic Vertical Datum of 1929 (Water and Power Resources Service benchmark).

REMARKS.--Since 1917, flow increased during irrigation season by water from the St. Mary Canal which diverts from the St. Mary River near Babb. Flow regulated by Fresno and Nelson Reservoirs, two reservoirs in Lodge Creek basin in Saskatchewan, and four reservoirs in Frenchman River basin in Saskatchewan. Water is diverted at Vandalia Dam 7.1 mi (11.4 km) upstream for irrigation downstream. Diversions above station for irrigation of about 126,000 acres (510 km²) of which 18,000 acres (72.8 km²) lies below station.

AVERAGE DISCHARGE.--26 years (1914-25, 1928-39, 1969-73), 704 ft³/s (19.94 m³/s), 510,000 acre-ft/yr (629 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 27,200 ft³/s (770 m³/s) Apr. 1, 1925, gage height, 35.35 ft (10.775 m), site and datum then in use; maximum gage height, 36.47 ft (11.116 m) Mar. 25, 1939, site and datum then in use; no flow at times.

MONTHLY AND ANNUAL MEAN DISCHARGES 1915-25, 1929-39, 1970-73

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	758	9.5	180	168	.93	2.1
NOVEMBER	256	57	155	58	.38	1.8
DECEMBER	194	26	98	46	.47	1.2
JANUARY	1440	20	126	270	2.14	1.5
FEBRUARY	2160	15	322	509	1.58	3.8
MARCH	6900	91	1710	1840	1.08	20.3
APRIL	13700	44	2670	3090	1.16	31.7
MAY	4120	2.5	876	1120	1.28	10.4
JUNE	6570	2.7	1220	1390	1.14	14.5
JULY	4560	7.6	702	1170	1.67	8.3
AUGUST	1100	5.9	224	277	1.23	2.7
SEPTEMBER	463	13	149	129	.87	1.8
ANNUAL	1680	73	70[illegible]	470	.67	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1915-73

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
3860	8940	17800	24100	32100	37800	43200

WEIGHTED SKEW = -0.688

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1916-25, 1930-39, 1971-73

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	4	.00	.00	.00	-----	-----
3	6	1.2	.3	.00	-----	-----
7	8	2.5	.8	.3	-----	-----
14	16	5.8	1.8	.6	-----	-----
30	28	9.1	4.4	2.3	-----	-----
60	49	19	10	5.7	-----	-----
90	71	31	18	10	-----	-----
120	88	39	22	13	-----	-----
183	114	54	33	20	-----	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1915-25, 1929-39, 1970-73

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	8610	16500	21500	26900	-----	-----
3	7610	15100	19800	25000	-----	-----
7	6460	13200	17500	22100	-----	-----
15	4690	9940	13700	18200	-----	-----
30	3110	6600	9240	12700	-----	-----
60	2110	4340	6000	8150	-----	-----
90	1750	3310	4320	5480	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1915-25, 1929-39, 1970-73

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
9870	3340	1680	1080	632	291	183	124	94	67	41	17	7.7	3.0	1.8	1.4	.40

06172200 BUGGY CREEK NEAR TAMPICO, MT

LOCATION.--Lat 48°21'40", long 106°46'38", in SE¼NW¼NW¼ sec.15, T.30 N., R.38 E., Valley County, Hydrologic Unit 10050012, on left bank 100 ft (30 m) downstream from bridge on U.S. Highway 2, 4 mi (6 km) upstream from mouth, and 4 mi (6 km) northeast of Tampico.

DRAINAGE AREA.--105 mi² (272 km²).

PERIOD OF RECORD.--October 1957 to September 1967. Prior to October 1965, published as Lime Creek near Tampico.

GAGE.--Water-stage recorder. Altitude of gage is 2,180 ft (664 m), from topographic map.

REMARKS.--Some storage in stock ponds upstream from station.

AVERAGE DISCHARGE.--10 years, 5.38 ft³/s (0.152 m³/s), 3,890 acre ft/yr (4.80 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,220 ft³/s (62.9 m³/s) May 6, 1965, gage height 6.63 ft (2.021 m), but may have been higher June 6 or July 11, 1963; no flow for most of each year.

MONTHLY AND ANNUAL MEAN DISCHARGES 1958-67

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	.00	.00	.00	.00		.00
NOVEMBER	.00	.00	.00	.00		.00
DECEMBER	.00	.00	.00	.00		.00
JANUARY	.00	.00	.00	.00		.00
FEBRUARY	17	.00	1.7	5.4	3.16	2.7
MARCH	114	.00	23	36	1.57	35.5
APRIL	64	.00	13	22	1.75	19.8
MAY	59	.00	9.7	19	2.01	15
JUNE	50	.00	6.6	15	2.35	10.2
JULY	73	.00	11	24	2.26	16.5
AUGUST	1.8	.00	.18	.56	3.14	.30
SEPTEMBER	.00	.00	.00	.00		.00
ANNUAL	12	.00	5.4	5.1	.94	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1959-67

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.00	.00	.00	.00	-----	-----
3	.00	.00	.00	.00	-----	-----
7	.00	.00	.00	.00	-----	-----
14	.00	.00	.00	.00	-----	-----
30	.00	.00	.00	.00	-----	-----
60	.00	.00	.00	.00	-----	-----
90	.00	.00	.00	.00	-----	-----
120	.00	.00	.00	.00	-----	-----
183	.00	.00	.00	.00	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1958-67

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
38	244	1280	2830	6240	10100	15300

WEIGHTED SKEW = -0.390

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1958-67

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	170	1040	2000	-----	-----	-----
3	115	650	1120	-----	-----	-----
7	68	385	680	-----	-----	-----
15	35	215	385	-----	-----	-----
30	19	125	235	-----	-----	-----
60	10	70	135	-----	-----	-----
90	5.0	47	95	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1958-67

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
140	9.0	.10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

06174000 WILLOW CREEK NEAR GLASGOW, MT

LOCATION.--Lat 48°06'52", long 106°40'15", in SW¼NW¼NE¼ sec.10, T.27 N., R.39 E., Valley County, Hydrologic Unit 10050012, on right bank 5.8 mi (9.3 km) south of Glasgow and 10.6 mi (17.1 km) upstream from mouth.

DRAINAGE AREA.--538 mi^2 (1,393 km^2)

PERIOD OF RECORD.--October 1953 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,085.63 ft (635.700 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REVISED RECORDS.--WSP 1729: Drainage area. WSP 1916: 1960.

REMARKS.--There are more than 270 storage and detention reservoirs upstream. Water-spreader irrigation of about 5,000 acres (20.2 km^2) of hay or pasture lands to extent of available flow.

AVERAGE DISCHARGE.--26 years (1953-79), 62.8 ft^3/s (1.778 m^3/s), 45,500 acre-ft/yr (56.1 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,400 ft^3/s (351 m^3/s) July 14, 1962, gage height, 21.70 ft (6.614 m); maximum gage height, 23.0 ft (7.01 m) June 21, 1974; no flow at times each year.

MONTHLY AND ANNUAL MEAN DISCHARGES 1954-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	71	.00	7.5	17	2.24	1.0
NOVEMBER	23	.00	1.5	4.5	3.06	.20
DECEMBER	23	.00	1.6	4.8	3.08	.20
JANUARY	37	.00	1.5	7.1	4.82	.20
FEBRUARY	128	.00	16	31	1.97	2.1
MARCH	707	.00	175	232	1.32	23.4
APRIL	730	.00	134	205	1.53	17.9
MAY	589	.00	135	175	1.3	18
JUNE	490	.00	93	130	1.4	12.4
JULY	1020	.00	119	247	2.07	15.9
AUGUST	235	.00	38	68	1.81	5.0
SEPTEMBER	621	.00	28	121	4.32	3.7
ANNUAL	158	1.3	63	48	.76	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1955-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.00	.00	.00	.00	-----	-----
3	.00	.00	.00	.00	-----	-----
7	.00	.00	.00	.00	-----	-----
14	.00	.00	.00	.00	-----	-----
30	.00	.00	.00	.00	-----	-----
60	.00	.00	.00	.00	-----	-----
90	.00	.00	.00	.00	-----	-----
120	.03	.00	.00	.00	-----	-----
183	.40	.00	.00	.00	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1954-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
980	2390	5730	8840	13900	18600	23800

WEIGHTED SKEW = -0.388

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1954-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1990	4390	5910	7540	-----	-----
3	1440	3280	4490	5830	-----	-----
7	933	2160	2990	3930	-----	-----
15	565	1290	1770	2320	-----	-----
30	345	788	1080	1400	-----	-----
60	209	497	698	928	-----	-----
90	162	373	509	655	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1954-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1490	285	88	36	16	3.5	.49	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

06174500 MILK RIVER AT NASHUA, MT

LOCATION.--Lat 48°07'52", long 106°21'50", in NE¼NE¼ sec.1, T.27 N., R.41 E., Valley County, Hydrologic Unit 10050012, on right bank at downstream side of former highway bridge site, 0.6 mi (1.0 km) southwest of Nashua, 2.0 mi (3.2 km) upstream from Porcupine Creek, and at mile 24.0 (38.6 km).

DRAINAGE AREA.--22,332 mi^2 (57,840 km^2).

PERIOD OF RECORD.--October 1939 to current year.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,027.75 ft (618.058 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Flow increased during irrigation season by water from St. Mary Canal which diverts from the St. Mary River near Babb. Flow regulated by Fresno Reservoir, two reservoirs in Lodge Creek basin in Saskatchewan, and four reservoirs in Frenchman River basin in Saskatchewan. Diversions for irrigation of about 140,000 acres (567 km^2) above station.

AVERAGE DISCHARGE.--40 years (1939-79), 739 ft^3/s (20.93 m^3/s) 535,400 acre-ft/yr (660 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,300 ft^3/s (1,280 m^3/s) Apr. 18, 1952, gage height, 31.38 ft (9.565 m); minimum, 0.6 ft^3/s (0.017 m^3/s) July 15, 1961, gage height, 1.96 ft (0.597 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1940-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	542	57	205	137	.67	2.3
NOVEMBER	691	81	222	129	.58	2.5
DECEMBER	363	46	160	70	.44	1.8
JANUARY	843	36	143	124	.87	1.6
FEBRUARY	796	39	206	179	.87	2.3
MARCH	4400	89	1140	1060	.92	12.9
APRIL	20900	27	3000	3930	1.31	33.8
MAY	5210	39	1310	1580	1.2	14.8
JUNE	6610	96	1130	1230	1.09	12.7
JULY	3580	15	727	799	1.1	8.2
AUGUST	997	23	340	248	.73	3.8
SEPTEMBER	2140	60	291	332	1.14	3.3
ANNUAL	2360	93	739	499	.67	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1940-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
2970	6580	13200	18400	25500	31000	36600

WEIGHTED SKEW = -0.449

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1941-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	53	20	9.8	4.8	1.9	1.0
3	57	22	11	5.7	2.4	1.2
7	67	27	13	6.7	2.7	1.4
14	76	33	19	11	5.8	3.5
30	93	49	32	22	13	9.3
60	111	68	50	38	27	21
90	124	79	61	49	37	30
120	136	88	69	56	43	36
183	156	102	82	69	57	50

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1940-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	6840	13100	17400	22700	26300	29700
3	6570	12600	16600	21400	24600	27400
7	5860	11600	15600	20300	23500	26400
15	4700	9640	13200	17600	20800	23800
30	3290	6860	9530	13000	15600	18000
60	2110	4390	6160	8550	10400	12200
90	1620	3340	4680	6510	7930	9380

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1940-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
9310	3690	1600	907	627	391	263	203	161	129	100	69	47	28	20	14	6.7

06177000 MISSOURI RIVER NEAR WOLF POINT, MT

LOCATION.--Lat 48°03'57", long 105°32'12", in SW¼NW¼ sec.28, T.27 N., R.48 E., McCone County, Hydrologic Unit 10060001, on right bank 500 ft (150 m) downstream from bridge on State Highway 13, 5 mi (8 km) southeast of Wolf Point, 7.8 mi (12.6 km) downstream from Wolf Creek, and at mile 1,701.4 (2,737.6 km).

DRAINAGE AREA.--82,290 mi² (213,131 km²).

PERIOD OF RECORD.--September 1928 to current year.

REVISED RECORDS.--WSP 1146: 1931. WSP 1729: Drainage area.

GAGE.--Water-stage recorder and nonrecording gage. Datum of gage is 1,958.57 ft (596.972 m) National Geodetic Vertical Datum of 1929. Prior to Apr. 13, 1930, nonrecording gages at Wolf Point ferry landing 5.5 mi (8.8 km) upstream at different datum.

REMARKS.--Flow partly regulated by Fort Peck Lake and many other reservoirs above station. Diversions for irrigation of about 1,010,400 acres (4,090 km²) above station.

AVERAGE DISCHARGE.--11 years (1928-39, prior to Fort Peck Lake reaching operational level), 7,219 ft³/s (204.4 m³/s), 5,230,000 acre-ft/yr (6.45 km³/yr); 36 years (1943-79, after operational level was reached), 10,640 ft³/s (301.3 m³/s) 7,709,000 acre-ft/yr (9.51 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 66,800 ft³/s (1,890 m³/s) Mar. 25, 1939, gage height, 14.4 ft (4.39 m), ice present, from rating curve extended above 39,000 ft³/s (1,100 m³/s); maximum gage height, 15.64 ft (4.767 m) Mar. 27, 1960 (backwater from ice); minimum daily discharge, 320 ft³/s (9.06 m³/s) Dec. 10, 1941.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 14, 1908, reached a stage of about 20 ft (6.1 m), present site and datum.

MONTHLY AND ANNUAL MEAN DISCHARGES 1929-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	29100	1150	11000	7790	.71	9.7
NOVEMBER	20800	1180	8300	4410	.53	7.3
DECEMBER	13400	1150	7070	3520	.50	6.2
JANUARY	14300	914	7350	4010	.55	6.5
FEBRUARY	15800	1050	7660	4810	.63	6.8
MARCH	17100	2300	8630	4180	.48	7.6
APRIL	27200	1470	10500	5400	.52	9.2
MAY	21800	1180	9620	5200	.54	8.5
JUNE	26000	1270	10100	6190	.62	8.9
JULY	36300	1170	9890	6240	.63	8.7
AUGUST	27100	2400	11800	6650	.56	10.4
SEPTEMBER	27200	2300	11500	7320	.64	10.2
ANNUAL	15900	4100	9450	3260	.34	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1930-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	2640	1290	856	597	389	289
3	2820	1410	944	666	440	330
7	3030	1580	1110	814	570	446
14	3380	1780	1250	914	635	493
30	3840	2050	1430	1050	724	561
60	4430	2370	1660	1210	835	644
90	4940	2670	1860	1350	915	697
120	5360	2970	2090	1530	1050	804
183	6990	4170	3050	2300	1630	1280

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1943-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
16900	22700	29700	33800	38600	41800	44800

WEIGHTED SKEW = -0.342

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1929-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	22200	30300	35700	42600	47800	53100
3	21600	28900	33600	39400	43600	47800
7	20600	27600	32000	37500	41400	45300
15	19400	26100	30300	35300	38800	42200
30	17800	24000	27800	32400	35600	38600
60	15700	20900	24200	28100	30900	33600
90	13900	18400	21200	24700	27200	29700

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1929-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
29400	22100	17000	15300	14300	12100	10100	8140	6820	5510	4080	2760	1510	1160	1060	950	737

06177000 MISSOURI RIVER NEAR WOLF POINT, MT--Continued

PERIOD OF RECORD.--1943-79.

REMARKS.--Data below based on period of record after Fort Peck Lake reached operational level.

MONTHLY AND ANNUAL MEAN DISCHARGES 1943-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	29100	3460	13500	7680	.57	10.7
NOVEMBER	20800	2330	9780	4100	.42	7.7
DECEMBER	13400	1340	8500	2850	.34	6.7
JANUARY	14300	995	8920	3510	.39	7.1
FEBRUARY	15800	1200	9130	4630	.51	7.2
MARCH	16800	2300	8780	4150	.47	7.0
APRIL	27200	1470	10800	5800	.54	8.5
MAY	21800	1180	9500	5150	.54	7.5
JUNE	26000	1270	9170	5320	.58	7.3
JULY	36300	1170	10700	6800	.64	8.4
AUGUST	27100	3520	13600	6470	.48	10.8
SEPTEMBER	27200	4360	13900	6980	.50	11
ANNUAL	15900	5610	10500	3060	.29	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1944-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	3650	1970	1340	950	621	-----
3	3920	2170	1510	1080	722	-----
7	4260	2380	1660	1200	808	-----
14	4700	2710	1930	1410	962	-----
30	5150	3020	2180	1620	1130	-----
60	5670	3450	2490	1850	1290	-----
90	6460	3910	2860	2150	1520	-----
120	6980	4310	3180	2390	1690	-----
183	8650	6380	5380	4640	3910	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1943-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	21900	28800	33100	38200	41700	-----
3	21300	28100	32300	37300	40800	-----
7	20500	27100	31200	36000	39400	-----
15	19500	26200	30300	35200	38600	-----
30	18200	24700	28700	33600	37100	-----
60	16200	21800	25400	29700	32900	-----
90	14500	19200	22200	26000	28700	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1943-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
29700	23400	18100	15700	14900	13100	11200	9560	7980	6870	5660	3660	2180	1280	1160	1100	874

06177000 MISSOURI RIVER NEAR WOLF POINT, MT--Continued

PERIOD OF RECORD.--1929-39.

REMARKS.--Data below based on period of record prior to Fort Peck Lake reaching operational level.

MONTHLY AND ANNUAL MEAN DISCHARGES 1929-39

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	6410	3410	4640	1040	.22	5.4
NOVEMBER	11100	2630	4910	2340	.48	5.7
DECEMBER	9090	1510	3770	1980	.53	4.4
JANUARY	5220	2300	3790	1050	.28	4.4
FEBRUARY	10500	1060	4510	2630	.58	5.2
MARCH	17100	5550	9610	3950	.41	11.2
APRIL	17500	3000	10200	4450	.44	11.8
MAY	16700	1620	11700	4860	.42	13.5
JUNE	25900	7140	15100	6450	.43	17.5
JULY	19000	3760	7730	4210	.54	9.0
AUGUST	14700	2400	5420	3420	.63	6.3
SEPTEMBER	15000	2300	4840	3440	.71	5.6
ANNUAL	10300	4890	7180	1530	.21	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1930-39

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	1630	1240	1040	885	-----	-----
3	1700	1300	1100	933	-----	-----
7	1810	1380	1150	974	-----	-----
14	2020	1480	1210	1010	-----	-----
30	2560	1820	1440	1160	-----	-----
60	2930	2280	1960	1760	-----	-----
90	3370	2510	2100	1780	-----	-----
120	3530	2670	2300	2030	-----	-----
183	3660	3000	2780	2650	-----	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1929-39

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	27500	38000	45200	-----	-----	-----
3	25800	34400	39400	-----	-----	-----
7	23800	32200	37000	-----	-----	-----
15	21300	28800	32800	-----	-----	-----
30	18000	24000	27100	-----	-----	-----
60	15600	19900	21900	-----	-----	-----
90	14100	17300	18600	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1929-39

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
28100	19100	15100	12800	10800	7560	5980	5050	4320	3870	3390	2630	2190	1360	1140	1040	889

06177500 REDWATER RIVER AT CIRCLE, MT

LOCATION.--Lat 47°24'51", long 105°34'30", in SW¼SW¼ sec.11, T.19 N., R.48 E., McCone County, Hydrologic Unit 10060002, on left bank at Circle, 1 mi (2 km) upstream from Horse Creek, and at mile 79.6 (128.1 km).

DRAINAGE AREA.--547 mi² (1,417 km²).

PERIOD OF RECORD.--April to November 1929, March to November 1930, July 1931 to December 1932, March to June 1933, February to November 1934, April 1935 to December 1936, April 1937 to June 1972, October 1974 to current year. Monthly discharge only for some periods, published in WSP 1309. Prior to October 1967, published as Redwater Creek at Circle.

REVISED RECORDS.--WSP 1006: 1929-30, 1932-33, 1935-39. WSP 1509: 1929, 1934. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Sharp-crested weir since Sept. 24, 1938. Datum of gage is 2,394.32 ft (729.789 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to June 1, 1941, and Mar. 23, 1943, to Feb. 16, 1948, nonrecording gage at site 0.3 mi (0.5 km) upstream at same datum. June 1, 1941, to Mar. 22, 1943, nonrecording gage at site 200 ft (61 m) upstream at datum 2.8 ft (0.85 m) lower. Feb. 26, 1948, to May 7, 1950, nonrecording gage at site 200 ft (61 m) upstream at present datum.

REMARKS.--Few minor diversions for irrigation of hay meadows above station.

AVERAGE DISCHARGE.--41 years (1931-32, 1935-36, 1937-71, 1975-79), 14.3 ft³/s (0.405 m³/s), 10,360 acre-ft/yr (12.8 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,730 ft³/s (191 m³/s) July 14, 1957, gage height, 12.77 ft (3.892 m); no flow at times most years.

MONTHLY AND ANNUAL MEAN DISCHARGES
1932, 1936, 1938-71, 1975-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	2.7	.00	.23	.45	1.92	.10
NOVEMBER	2.7	.00	.24	.46	1.94	.10
DECEMBER	8.6	.00	.37	1.4	3.68	.20
JANUARY	6.1	.00	.23	.95	4.13	.10
FEBRUARY	141	.00	17	37	2.18	10
MARCH	388	.05	87	110	1.27	50.8
APRIL	418	.07	27	72	2.72	15.6
MAY	32	.02	4.6	6.6	1.43	2.7
JUNE	167	.00	16	33	2.07	9.3
JULY	116	.00	16	31	2.02	9.1
AUGUST	37	.00	2.9	7.7	2.62	1.7
SEPTEMBER	5.6	.00	.46	1.1	2.43	.30
ANNUAL	62	.04	14	14	.94	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1938-72, 1976-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.00	.00	.00	.00	.00	-----
3	.00	.00	.00	.00	.00	-----
7	.00	.00	.00	.00	.00	-----
14	.00	.00	.00	.00	.00	-----
30	.00	.00	.00	.00	.00	-----
60	.01	.00	.00	.00	.00	-----
90	.03	.00	.00	.00	.00	-----
120	.05	.00	.00	.00	.00	-----
183	.07	.01	.00	.00	.00	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1929-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
128	1110	2910	4640	7420	9930	12600

WEIGHTED SKEW = -0.395

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1932, 1936, 1938-71, 1975-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	546	1970	3180	4680	5660	-----
3	381	1310	2050	2920	3470	-----
7	235	767	1170	1630	1900	-----
15	136	428	640	873	1010	-----
30	81	239	347	458	520	-----
60	49	134	186	235	260	-----
90	36	94	127	157	171	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1932, 1936, 1938-71, 1975-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
311	29	8.7	4.1	2.5	.94	.40	.21	.14	.00	.00	.00	.00	.00	.00	.00	.00

06181000 POPLAR RIVER NEAR POPLAR, MT

LOCATION.--Lat 48°10'15", long 105°10'42", in NE¼NE¼ sec.19, T.28 N., R.51 E., Roosevelt County, Hydrologic Unit 10060003, on right bank 4 mi (6 km) north of Poplar and 11 mi (18 km) upstream from mouth.

DRAINAGE AREA.--3,174 mi² (8,221 km²).

PERIOD OF RECORD.--August 1908 to October 1924, August 1947 to September 1969, June 1975 to September 1979. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1176: 1948. WSP 1389: 1911. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,970 ft (600 m), from topographic map. Prior to May 1, 1911, nonrecording gage at site 4.2 mi (6.8 km) upstream at different datum. May 1, 1911, to Oct. 4, 1913, nonrecording gage at site 14 mi (23 km) upstream at different datum. Oct. 5, 1913, to Oct. 31, 1924, nonrecording gage at site 2.2 mi (3.5 km) upstream at different datum. Aug. 10, 1947, to Sept. 30, 1969, water-stage recorder at present site and datum.

REMARKS.--Diversions for irrigation of about 5,500 acres (22.3 km²) above station. Flow partially regulated by Coronach Dam, on the East Fork Poplar River, 2 mi (3 km) north of international boundary.

AVERAGE DISCHARGE.--42 years (1908-24, 1947-69, 1975-79), 138 ft³/s (3.908 m³/s), 99,980 acre-ft/yr (123 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,400 ft³/s (1,060 m³/s) Apr. 6, 1954, gage height, 17.86 ft (5.444 m), from floodmark; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 10, 1946, reached a stage of 18.1 ft (5.52 m), from floodmark, discharge, 40,000 ft³/s (1,130 m³/s), from slope-area measurement of peak flow made at site 20 mi (32 km) upstream.

MONTHLY AND ANNUAL MEAN DISCHARGES 1909-24, 1948-69, 1976-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	80	2.2	30	21	.68	1.8
NOVEMBER	94	4.3	30	17	.57	1.8
DECEMBER	50	1.4	18	11	.61	1.1
JANUARY	30	.01	9.4	7.8	.82	.60
FEBRUARY	99	.10	14	18	1.33	.80
MARCH	2450	.18	316	472	1.49	19.1
APRIL	4920	61	878	1140	1.3	53
MAY	421	27	142	104	.73	8.6
JUNE	336	8.1	98	80	.81	5.9
JULY	222	2.9	65	62	.95	3.9
AUGUST	180	.06	27	33	1.23	1.6
SEPTEMBER	206	.55	29	36	1.25	1.7
ANNUAL	435	29	138	104	.76	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1910-24, 1949-69, 1977-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	2.0	.30	.03	.00	.00	.00
3	2.1	.40	.08	.02	.00	.00
7	2.4	.45	.10	.02	.00	.00
14	2.8	.55	.15	.04	.01	.00
30	3.7	.80	.27	.10	.03	.00
60	4.8	1.1	.46	.20	.07	.03
90	8.0	2.3	1.0	.47	.18	.08
120	12	4.9	2.7	1.6	.79	.48
183	17	8.7	5.6	3.8	2.3	1.6

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1909-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1250	3720	10900	18100	30000	42000	54400

WEIGHTED SKEW = -0.400

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1909-24, 1948-69, 1976-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	2230	6890	12500	23900	36400	53400
3	1870	5690	10400	20100	31100	46300
7	1440	4010	7000	12900	19200	27700
15	1010	2580	4330	7670	11200	15900
30	688	1600	2530	4210	5890	8010
60	432	930	1420	2250	3060	4060
90	323	663	984	1520	2030	2650

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1909-24, 1948-69, 1976-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
2030	438	205	136	93	55	36	25	19	14	8.9	3.0	1.1	.26	.16	.11	.10

BEST DOCUMENT AVAILABLE

06182500 BIG MUDDY CREEK AT DALEVIEW, MT

LOCATION.--Lat 48°54'40", long 104°56'42", near center of north line of sec.5, T.36 N., R.52 E., Sheridan County, Hydrologic Unit 10060006, on right bank 0.5 mi (0.8 km) west of Daleview, 0.5 mi (0.8 km) upstream from Whitetail Creek, and 6 mi (10 km) north of Redstone, and at mile 149.6.(240.7 km).

DRAINAGE AREA.--279 mi^3 (723 km^2).

PERIOD OF RECORD.--August 1947 to June 1972.

REVISED RECORDS.--WSP 1209: 1948(M). WSP 1309: Drainage area. WSP 1389: 1948. WSP 1559: 1955.

GAGE.--Water-stage recorder. Altitude of gage is 2,120 ft (646 m), by barometer.

REMARKS.--No known regulation. Diversions for irrigation of about 90 acres (0.36 km^2) above station.

AVERAGE DISCHARGE.--24 years (1947-71), 15.7 ft^3/s (0.455 m^3/s), 11,370 acres-ft/yr (14.0 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,360 ft^3/s (180 m^3/s) Apr. 7, 1952, gage height, 17.15 ft (5.227 m), from rating curve extended above 1,300 ft^3/s (36.8 m^3/s) on basis of slope-area measurement of peak flow; no flow at times.

MONTHLY AND ANNUAL MEAN DISCHARGES 1948-71

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	8.1	.92	2.1	1.5	.70	1.1
NOVEMBER	3.7	.84	1.6	.69	.38	1.0
DECEMBER	3.5	.01	.93	.86	.93	.50
JANUARY	3.5	.00	.41	.73	1.78	.20
FEBRUARY	38	.00	3.3	8.7	2.61	1.8
MARCH	282	.04	44	62	1.4	23.4
APRIL	534	4.3	103	143	1.39	54.8
MAY	59	2.0	12	14	1.15	6.6
JUNE	96	.84	12	22	1.81	6.5
JULY	26	.46	3.9	6.1	1.58	2.1
AUGUST	19	.00	2.2	3.9	1.79	1.2
SEPTEMBER	10	.00	1.8	2.5	1.39	1.0
ANNUAL	45	3.3	16	11	.71	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1948-75

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
400	941	2250	3370	5130	6720	8460

WEIGHTED SKEW = -0.400

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1949-72

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.00	.00	.00	.00	-----	-----
3	.00	.00	.00	.00	-----	-----
7	.00	.00	.00	.00	-----	-----
14	.00	.00	.00	.00	-----	-----
30	.00	.00	.00	.00	-----	-----
60	.03	.00	.00	.00	-----	-----
90	.20	.01	.00	.00	-----	-----
120	.52	.23	.14	.10	-----	-----
183	.83	.58	.50	.45	-----	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1948-71

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	759	1810	2770	4250	-----	-----
3	543	1260	1900	2860	-----	-----
7	329	737	1100	1660	-----	-----
15	186	402	600	918	-----	-----
30	110	227	330	490	-----	-----
60	62	122	174	255	-----	-----
90	44	84	118	167	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1948-71

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
322	35	14	7.4	5.0	3.0	2.1	1.5	1.1	.62	.16	.00	.00	.00	.00	.00	.00

06185000 BIG MUDDY CREEK NEAR CULBERTSON, MT

LOCATION.--Lat 48°16', long 104°43', in NE¼ sec.20, T.29 N., R.54 E., Roosevelt County, Hydrologic Unit 10060006, 11 mi (18 km) upstream from mouth and 12 mi (19 km) norhtwest of Culbertson.

DRAINAGE AREA.--2,447 mi^2 (6,338 km^2).

PERIOD OF RECORD.--August 1908 to November 1921.

REVISED RECORDS.--WSP 1729: 1910(M), 1912(M), 1913-21, drainage area.

GAGE.--Nonrecording gage. Altitude of gage is 1,910 ft (582 m), from topographic map. July 19, 1909, to Sept. 16, 1918, slope gage at same datum. Prior to July 19, 1909, nonrecording gage at site 8 mi (13 km) downstream at different datum.

REMARKS.--Several small diversions above station.

AVERAGE DISCHARGE.--13 years (1908-21), 58.5 ft^3/s (1.657 m^3/s), 42,380 acre-ft/yr (52.3 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 1,550 ft^3/s (43.9 m^3/s) Mar. 31, 1916, gage height, 11.4 ft (3.47 m); no flow at times.

MONTHLY AND ANNUAL MEAN DISCHARGES 1909-21

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	35	.60	8.2	9.0	1.09	1.2
NOVEMBER	11	.00	5.9	4.1	.71	.80
DECEMBER	12	.00	3.9	3.5	.90	.60
JANUARY	10	.00	2.5	2.8	1.12	.40
FEBRUARY	30	.00	3.7	8.0	2.18	.50
MARCH	359	10	116	139	1.2	16.4
APRIL	1210	47	369	373	1.01	52.4
MAY	246	3.7	68	77	1.13	9.7
JUNE	249	6.9	59	71	1.21	8.3
JULY	143	2.0	44	47	1.07	6.2
AUGUST	45	.54	13	12	.91	1.9
SEPTEMBER	51	.44	12	17	1.45	1.7
ANNUAL	170	19	59	43	.74	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1910-21

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.00	.00	.00	.00	-----	-----
3	.00	.00	.00	.00	-----	-----
7	.00	.00	.00	.00	-----	-----
14	.13	.00	.00	.00	-----	-----
30	.60	.00	.00	.00	-----	-----
60	2.0	.00	.00	.00	-----	-----
90	2.0	.40	.20	.10	-----	-----
120	2.4	.60	.30	.20	-----	-----
183	4.1	1.0	.40	.30	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1909-21

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
540	861	1310	1590	1980	2190	2430

WEIGHTED SKEW = -0.400

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1909-21

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	840	1250	1490	1760	-----	-----
3	789	1210	1460	1750	-----	-----
7	698	1160	1450	1810	-----	-----
15	516	941	1260	1700	-----	-----
30	328	661	952	1400	-----	-----
60	191	392	574	867	-----	-----
90	140	277	404	613	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1909-21

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1100	262	109	62	40	22	13	8.0	5.2	3.1	1.8	.10	.00	.00	.00	.00	.00

06185500 MISSOURI RIVER NEAR CULBERTSON, MT

LOCATION.--Lat 48°07'24", long 104°28'30", in SE¼NW¼ sec.3, T.27 N., R.56 E., Richland County, Hydrologic Unit 10060005, on right bank at downstream side of bridge on State Highway 16, 3 mi (5 km) southeast of Culbertson, 9.6 mi (15.4 km) downstream from Big Muddy Creek, and at mile 1,620.76 (2,607.80 km).

DRAINAGE AREA.--91,557 mi^2 (237,133 km^2).

PERIOD OF RECORD.--July 1941 to December 1951, April 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,883.4 ft (574.06 m) National Geodetic Vertical Datum of 1929 (U.S. Corps of Engineers bench mark). July 1 to Nov. 6, 1941, water-stage recorder at site 400 ft (120 m) upstream at datum 0.11 ft (0.034 m) higher. Nov. 7, 1941, to Aug. 17, 1950, water-stage recorder at site 580 ft (177 m) downstream at present datum. Aug. 18, 1950, to Dec. 31, 1951, nonrecording gage on bridge at present datum. Apr. 1, 1958, to Nov. 1, 1967, water-stage recorder at site 580 ft (177 m) downstream at present datum.

REVISED RECORDS.--WSP 1729: Drainage area.

REMARKS.--Flow partly regulated by Fort Peck Lake and many other reservoirs above station. Diversions for irrigation of about 1,030,400 acres (4,170 km^2) above station.

AVERAGE DISCHARGE.--29 years (1943-51, 1958-79, after operational level at Fort Peck Lake was reached), 10,950 ft^3/s (310.1 m^3/s), 7,933,000 acre-ft/yr (9.78 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 78,200 ft^3/s (2,210 m^3/s) Mar. 26, 1943, gage height, 14.80 ft (4.511 m), from rating curve extended above 30,000 ft^3/s (850 m^3/s); maximum gage height observed, 19.66 ft (5.992 m) Apr. 14, 1979 (backwater from ice jam); minimum daily discharge, 575 ft^3/s (16.3 m^3/s) Nov. 22, 1941.

MONTHLY AND ANNUAL MEAN DISCHARGES 1942-51, 1959-79

MONTH	MAXIMUM (CFS)	MINIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	28600	1240	11700	6100	.52	9.2
NOVEMBER	15000	1130	9420	4160	.44	7.4
DECEMBER	13300	1060	8550	3310	.39	6.7
JANUARY	14300	1010	9030	3900	.43	7.1
FEBRUARY	17500	1170	9840	5230	.53	7.7
MARCH	20700	2670	10700	5070	.48	8.4
APRIL	32800	1970	12000	6500	.54	9.4
MAY	26200	1350	10000	5940	.59	7.9
JUNE	26700	1370	9650	5830	.60	7.6
JULY	37100	1270	10600	6890	.65	8.3
AUGUST	25300	3820	12700	5510	.43	10
SEPTEMBER	26600	4600	13100	5830	.45	10.3
ANNUAL	16600	4080	10600	3230	.30	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1943-51, 1959-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND NON-EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	3850	1960	1300	895	568	-----
3	4020	2360	1380	955	611	-----
7	4320	2260	1520	1070	693	-----
14	4690	2510	1710	1220	799	-----
30	5200	2790	1910	1360	898	-----
60	5920	3240	2230	1590	1050	-----
90	6480	3650	2550	1840	1230	-----
120	6920	3990	2830	2060	1390	-----
183	8370	6180	5240	4570	3900	-----

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1942-51, 1959-79

PERIOD (CONSECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	23200	33400	41800	54500	65600	-----
3	22400	31500	38500	48800	57400	-----
7	21400	29200	35000	43100	49700	-----
15	20100	26800	31400	37500	42100	-----
30	18300	24100	28200	33500	37700	-----
60	16100	21000	24500	29100	32700	-----
90	14500	18800	21800	25700	28700	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1943-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
18000	252000	34300	39800	46200	50700	54900

WEIGHTED SKEW = -0.335

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1942-51, 1959-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
29600	21500	17700	16100	14900	13500	11800	10100	8400	7120	5560	3410	1670	1250	1130	1020	770